

# BULLISH HONDA HAS IT FINALLY COME GOOD?



EXCLUSIVE INTERVIEW

## BOTTAS

ALMOST QUIT F1,  
RELIT THE FIRE,  
NOW IT'S ALL  
OR NOTHING...

## + ASTON MARTIN FLOORED

Has F1 taken  
revenge on the  
'Pink Mercedes'?

INSIDE

## MICK SCHUMACHER

RACING IN F1 WHEN  
YOU'RE THE SON  
OF A LEGEND

## JOURNEY TO JEDDAH

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**UPDATE REQUIRED**

Life's tough when you're partnered with the greatest driver of your generation. We've seen five distinct versions of Valtteri Bottas as Mercedes as he's tried to fulfil his own ambitions while being a consummate team player – two difficult competing missions which have been challenging to reconcile. Speaking exclusively to GP Racing, Valtteri doesn't hold back about his highs and lows, and why he still believes he can be world champion

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## No more waiting in the wings for Bottas

**For all the (justified) talk** of Max Verstappen and Red Bull-Honda finally being in the mix to challenge Lewis Hamilton and Mercedes for the world championship, there is another man who desperately needs the momentum to swing in his direction this year.

This month's cover star, Valtteri Bottas, has entered his fifth season driving for Formula 1's best team. He readily admits to Stuart Codling in a revealing interview (see page 32) that such a team as Mercedes expects nothing less than a title from him to justify several years of gainful employment.

Bottas has come back from the brink of quitting altogether after a dreadful 2018 season, working tirelessly to reinvent himself and raise his game. Now he's driving for his career, up against the best driver of this generation in the same machinery. No one can say Bottas runs away from a fight...

Valtteri feels 2020 was his best season in F1, personally, even though Hamilton cantered to a seventh championship. With Verstappen and Red Bull slow on the uptake, and Ferrari out of the picture for the first time since 2016, last season probably was Bottas' best chance to win the title – in a Nico Rosberg-style 1-on-1 fight with Lewis.

With Verstappen and Red Bull now ascending, there's greater risk that Bottas reverts to the 2018 'wingman' status he so despised – unless he can find some way to better unlock performance from the W12 and get back on terms with Hamilton.

You sense Bottas is in no mood to compromise or play second fiddle again. He's already been quicker to speak his mind and query his own team's strategy calls while calling for more support from Mercedes' top brass. With George Russell ready and waiting to take over, you get the sense Bottas senses it really is now or never.

The same is true for soon-to-depart Honda of course, and the giant strides made by the Japanese engine builder over the winter (see pages 54-60) mean Red Bull's 'sister team' AlphaTauri is also on the up. Pierre Gasly also explains to Alex Kalinauckas, in another exclusive interview, how the team formerly known as Toro Rosso has engineered the car in a specific way to better suit his driving style. Results have duly followed.

Results are less likely to be forthcoming for rookie Mick Schumacher this year, with team boss Guenther Steiner admitting to Oleg Karpov (see page 62) that Michael's son will spend his first season in F1 learning in a "bad car". The equipment might not be up to much, but Schumacher Jr has already impressed Haas – which includes several engineers and mechanics who worked alongside Michael – with his diligent approach.

Mick will need to keep up the hard work, because he will know already, as they all do, that you can't tread water for very long. In this game, it's sink or swim.

### Contributors



#### DAMIEN SMITH

Part 2 of Damien's fantastic history of Team Lotus focuses on Jim Clark, the driver who just was Lotus in the sixties. See page 68



#### ALEX KALINAUCKAS

Alex investigates how AlphaTauri is continuing to aid Pierre Gasly's superb rehabilitation since his demotion from Red Bull in 2019 (p56)



#### OLEG KARPOV

Is Schumacher Jr adjusting well to F1, despite the weight of expectation heaped on him? Oleg examines how Mick's getting on (p62)



#### STUART CODLING

Codders has a frank chat with Valtteri Bottas about the Finn's time at Mercedes and his make-or-break season ahead (p32)

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## Airtime after start time

Rain in the hour before the start of the Emilia Romagna got the photographers rubbing their hands in anticipation of some action – quite the reverse since we'd spent the preceding two days cursing the slate-grey sky and perma-gloom.

Overtaking is tricky here, marvellous though the circuit is, so the race start was bound to be a lively affair. And so it came to pass as Lewis Hamilton and Max Verstappen swooped down upon Tamburello on the opening lap. You could see Lewis wasn't going to surrender easily but he ran out of asphalt, and I was waiting on the inside of the track to capture the airborne moment that followed.



**Photographer**  
Andy Hone

**Where** Imola, Italy

**When** 3.03pm, Sunday  
18 April 2021

**Details** Canon EOS-1DX MkIII,  
70-200mm lens, 1/1250th @ F5.6



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## Sweet light on a gloomy day

Conditions at Imola were a mixed bag, albeit mostly gloomy, but if you were in the right place at the right time things fell into place. On Thursday afternoon there was light of a kind I'd never seen before at Imola as the cloud and rain eased off and broke up, leaving patches of blue sky and the setting sun.

The Aston Martin team couldn't have picked a better time to head out for some pitstop practice because the direction of the pitlane enabled me to shoot into the setting sun, picking out the puffs of dust and moisture set off by the wheel guns. It made for a nicely atmospheric shot, helped by the team's new colours.



**Photographer**  
Glenn Dunbar

**Where** Imola, Italy

**When** 6.14pm, Thursday  
15 April 2021

**Details** Canon EOS R5,  
28-70mm lens, 1/500th @ F2

## The art of moving and shaking

Since the COVID restrictions limit our movements – if you're shooting for a team in and around its garage you can't go trackside – the only way for me to stay practised in doing action shots at slow shutter speeds is to do it in the pitlane when someone drives past.

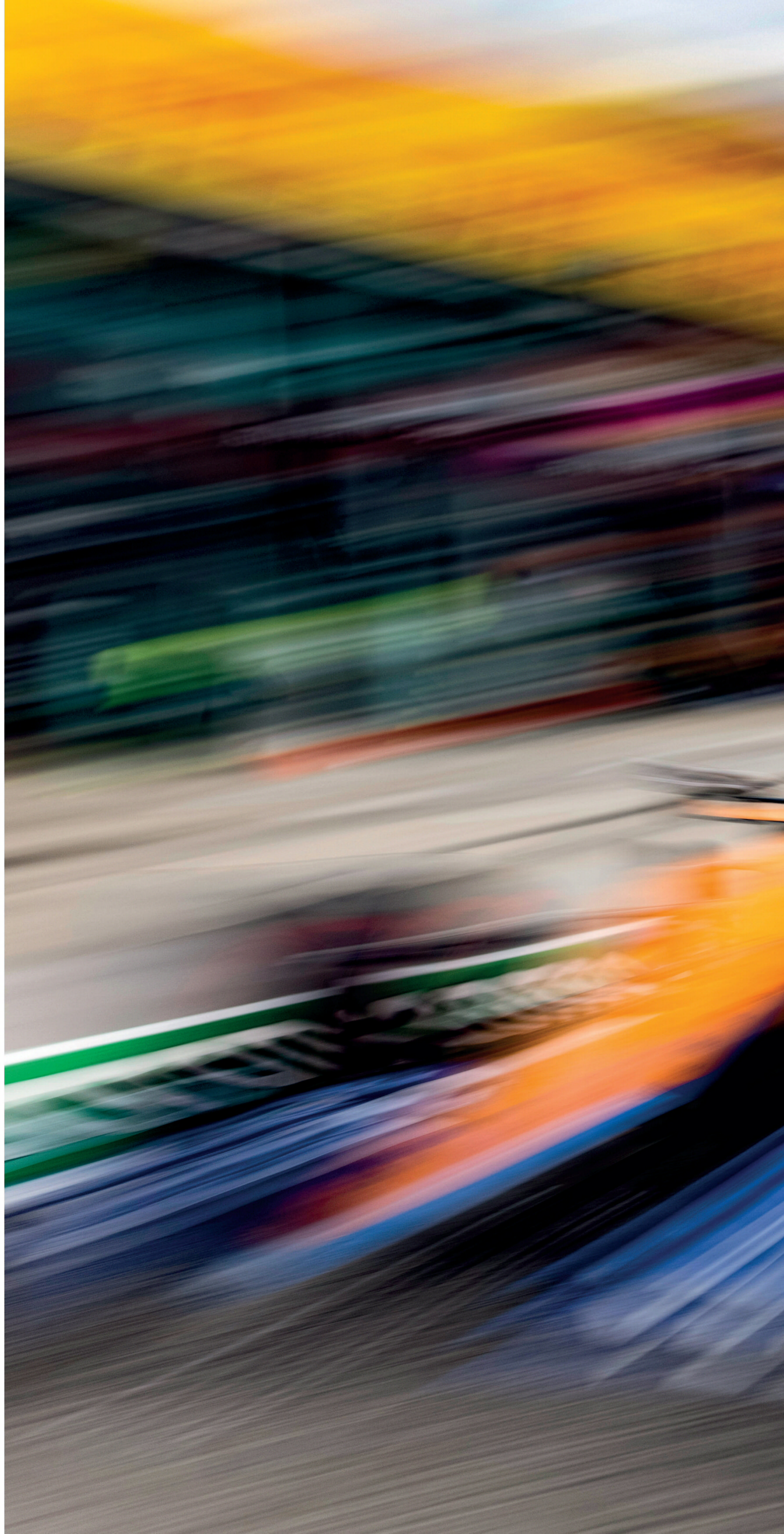
Some traditionalists (and a few sponsors who understandably don't like their logos blurred) decry shots like this but it's all about capturing the sensation of speed. And that to me is the essence of F1. I was particularly happy with this one of Daniel Ricciardo: it looks fast and is pin sharp on Dan's lid, plus the yellow and red of the DHL banner complements McLaren's orange livery.



**Photographer**  
Glenn Dunbar

**Where** Imola, Italy  
**When** 2.06pm, Saturday  
17 April 2021

**Details** Canon EOS R5,  
50mm lens, 1/8th @ F4.5









## Max looks at the bigger picture

With podium shots you never know quite what you're going to get, because you're capturing the vibe at a point where the emotions of the race are still fresh for the participants. Lewis in particular wears his heart on his sleeve and can't hide his disappointment when he loses.

At Imola, though, he'd done a storming recovery drive to second and that satisfaction is written in his eyes as he applauds Max's win. And, while Max is also wearing a face covering, his delight is plain to see – he's bossed this race and he knows it. Having a huge shot of his head on the video wall behind him kind of emphasises his dominance, I feel...



**Photographer**  
 Mark Sutton

**Where** Imola, Italy  
**When** 5.16pm, Sunday  
 18 April 2021

**Details** Nikon D6,  
 400mm lens, 1/400th @ F5.6





## Lando's massive leap forwards

When you're in a team's 'bubble' and one of its drivers gets on the podium – and you get your timing right – you can join them in Parc Fermé. So when Lando came across the line in third place I bolted down there with all the guys to capture the moment. As you can imagine, they were delighted: it was a challenging race but Lando drove magnificently.

He was pretty pleased too, as you can tell from his approach vector in this shot. He homed in on the mass of orange and curved around, like an athlete about to do the high jump. I was amused in this shot by the way the applauding hands frame him – a gift of the motor drive!



**Photographer**  
Steven Tee

**Where** Imola, Italy  
**When** 5.08pm, Sunday  
18 April 2021

**Details** Canon EOS-1DX MkII,  
16-35mm lens, 1/1000th @ F5.6

# CANADA LEADS COVID CALENDAR CHANGES

**01** **Barring the Azerbaijan Grand Prix**, which will take place behind closed doors, Formula 1 will now not leave the boundaries of Europe until at least September, when the Russian Grand Prix is due to take place. The Canadian Grand Prix scheduled for 11-13 June has been cancelled and replaced by a stand-in event at Turkey's Istanbul Park, which also hosted a round last year.

It's the second time the Montréal event has been cancelled because of the COVID-19 pandemic, and this latest development comes against a background of rising cases in Canada. Authorities have imposed travel restrictions which would have required F1 personnel to observe a 14-day quarantine period upon entry – not possible since the Azerbaijan GP falls the previous weekend.

GP Racing understands the call had to be made early since various infrastructure items, including the tyres, were due to depart for Canada by sea freight in late April. F1 also confirmed it had reached an agreement with the local promoter to extend Montréal's contract by two years, taking the event to 2031.

"While it is disappointing we cannot be in Canada this season, we are excited to confirm that Turkey will host a grand prix in 2021 after an amazing race last season," said F1 CEO Stefano Domenicali. "I want to thank the promoter and authorities in Canada for all their efforts in recent weeks but the travel situation made our plans impossible."

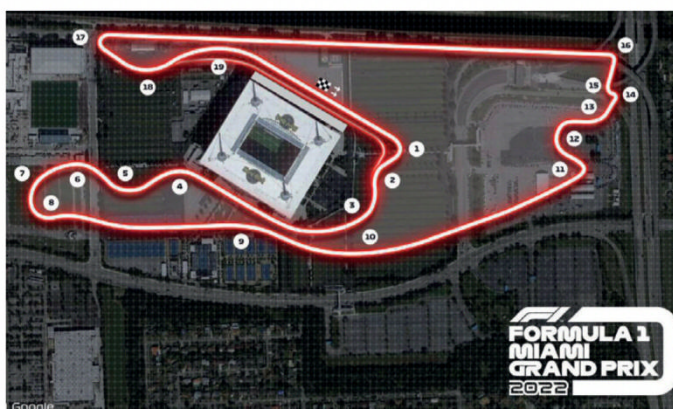
Canada may not be the only flyaway round to drop off the calendar this year as the pandemic situation – and the response from governments around the world – remains fluid. In Mexico and Brazil the virus is far from under control and Brazil is currently on the UK government's 'red list' of countries, which requires arrivals to the UK to undergo a 14-day hotel quarantine.

Since the majority of F1 teams are located in the UK, this will be problematic in terms of getting personnel to the following rounds if Brazil remains on the red list. The United Arab Emirates is also currently on the list although, since it hosts the final race of the season, post-event quarantine would be less disruptive – merely causing inconvenience and expense.

Other flyaway destinations not on the red list have immigration measures of their own which would make their events untenable unless F1 personnel were granted exemptions

**IN MEXICO AND BRAZIL THE VIRUS IS FAR FROM UNDER CONTROL AND BRAZIL IS CURRENTLY ON THE UK GOVERNMENT'S 'RED LIST' OF COUNTRIES**

**The revised Miami layout surrounds the Hard Rock Stadium, home to the NFL's Miami Dolphins**



PICTURES: PATRICK VINET; FORMULA 1

– which is unlikely. Australia, for instance, also requires a hotel quarantine and did not lift it for the Open tennis tournament in March. Singapore and Japan also have curbs on entry, to the extent that Tokyo's summer Olympics is currently under threat.

Amid all this uncertainty, F1 has been pressing on with plans for the 2022 season and has finally been able to confirm a 10-year deal on its long-held ambition, a second US-based race in Miami. No date has yet been specified for the event beyond Domenicali's announcement that it would take place in the "second quarter" of next year.

F1 has to trade off logistical expediency with promoters' requirements not to dilute the



Canada's strict quarantine restrictions mean the GP has had to be cancelled for a second successive year

audience, so the Miami round is more likely to fit in around the Canada's June slot than form a back-to-back with the US GP in Texas near the end of the season. The proposed venue is also different to the one outlined in 2018, which took in elements of the downtown area and passed over one of the bridges across the bay. That project was delayed and finally scuppered by political manoeuvrings and objections from local stakeholders.

The race will now take place near the Hard Rock Stadium in Miami Gardens, north of downtown and home to the Miami Dolphins NFL team. F1 presented the outline of a 3.36-mile circuit which partially encloses the stadium and places the pit complex along its northern edge.

"It is not a compromise," insisted Domenicali. "When you

look for different solutions, you need to consider all the elements that make everyone happy. I am sure the track you are going to see will be fantastic."

"In some ways it is going to be a lot better [than the original proposal]," said Miami Dolphins chairman Tom Garfinkel. "When we originally looked at the city design, you have a lot of constraints around the race track. The first priority was to create a great race track, and with the Hard Rock site we have a blank sheet of paper to put together a track that is demanding in a lot of ways and to put on great experiences that are uniquely reflective of the diversity of Miami."

Domenicali also confirmed a three-year extension to Suzuka's contract to host the Japanese GP, taking it to 2024. ►

## SPRINT RACES BECOME 'SPRINT QUALIFYING'

02

**F1 and the FIA have confirmed** that a controversial new qualifying format will be evaluated at three rounds this year, the first of which will be the British Grand Prix at Silverstone. In the new format, the grid will ultimately be decided by a race lasting around 30 minutes, and held on Saturday afternoon in place of the regular qualifying session.

The official name for this format is 'Sprint Qualifying', aimed at addressing a key reservation about the idea, which is having a separate race might devalue the main event on Sunday.

Wider detail changes to the sporting regulations for sprint qualifying weekends will support the stated desire to reduce predictability. There will be a single hour-long practice session on Friday, while the usual Saturday qualifying session will move to Friday afternoon and determine the grid for Saturday's 'sprint qualifying' race. To prevent teams building bespoke qualifying cars, Parc Fermé will come into force ahead of Friday qualifying. Reduced tyre allocations over the weekend and restrictions on which compounds can be used – and how many – in any given session should also introduce jeopardy.

It has taken nearly three months since the format was first announced to obtain full agreement from all stakeholders, and one of the sticking points – money – has been the subject of a protracted wrangle behind the scenes. As revealed in last month's *GP Racing*, the leading teams who are having to make cuts to meet the budget cap were pushing for an additional \$3million allowance (\$1m per event) to pay for any damage.

A compromise has now reached which involves a much lower flat fee, reported to be \$150,000 per sprint race, and an insurance scheme (up to \$100,000 per car) to cover damage.

**The British Grand Prix at Silverstone has been confirmed as the first race to trial the new 'Sprint Qualifying' format**

Within days of the announcement, an insight into the nature of the negotiations arrived in the form of a semi-cryptic 'think piece' on the state of F1 by McLaren CEO Zak Brown. Titled 'We Must Continue To Change' and running to 3500 words, the piece moved inoffensively through the gears until Brown rolled the grenade under the door, pin out, around 3000 words in.

"It is not in the best interests of competition if two rivals, or even three, share assets and align strategically," Brown wrote. "There have always been conflicts of interest in F1 and it's unlikely to change anytime soon, so it's even more important that F1 and the FIA, who have no other agenda than the whole sport's success, call the shots in the best interests of F1 and not be blocked and slowed at every turn.

"Decisions about the future of the sport can be halted by a minority, rather than majority, and they are further skewed by some teams' voting power being in favour of their affiliated team partner. There have even been instances when an affiliated team, to satisfy its bigger partner, has voted in favour of a clear disadvantage to itself. This isn't sport. This isn't putting the fans first. It is a situation that must be addressed and so we call for secret ballot voting to be implemented in all F1 Commission meetings with immediate effect."

*GP Racing* understands Brown's frustration derives from a representative of one such 'affiliated team' being actively directed to cease advocating an insurance scheme.



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NEXT MONTH\*



**PÉREZ RARING TO GO**  
Sergio keen to prove his worth to Red Bull



**COST-CUTTING WOES**  
How the budget cap is impacting on F1 teams

ON SALE

JUN 10

- > The history of Team Lotus, part 3
- > The F1 driver turned brand ambassador
- > Now That Was A Car: the McLaren MP4/1
- > Reports from the Spanish and Monaco GPs

PICTURES: ANDY HONE; CHARLES COATES; GLENN DUNBAR  
\*CONTENTS MAY BE SUBJECT TO CHANGE

# LOWE REVEALS MERC/WILLIAMS SECRETS

**03** **Former McLaren, Mercedes and Williams** technical director Paddy Lowe, absent from Formula 1 since his departure from Williams in 2019, has broken his silence in an interview with F1's official *Beyond the Grid* podcast. Among the revelations was that Mercedes deliberately held back on performance in 2014, the first year of the hybrid era, for political reasons.

The team knew it had the strongest engine, and that others were in trouble, from the first test onwards, and that a "bolt-on" upgrade to the Mercedes engine at the Bahrain test offered nearly a second a lap in terms of additional performance. But the arrival of hybrid power units was not uniformly well received, not least by F1 'ringmaster' Bernie Ecclestone, who raged against the lack of noise and the prospect of one team's dominance.

"Imagine the scene," said Lowe. "You've got Toto [Wolff] and the board of Daimler who are worried about the negative politics of looking too good. You've got Bernie running around saying this is all a nightmare, these engines are terrible. The thinking was if Mercedes had looked ridiculously good, then something would be done about it."

"In qualifying, we would never turn the engine up for Q1 or Q2. The debate would then be how much to turn the engine up for Q3. I would be getting it in the ear from Toto, 'That's too much, that's too much,' and I'm thinking, 'Yeah, but if we don't get pole, we'll look like a right bunch of mugs!'"

Lowe described his move to Williams in 2017 as "a period I don't like to dwell on" as he struggled to turn around a team in decline.

"Williams had the benefit of the best engine by a long chalk from 2014, so that gave some, let's say, false impressions of underlying performance," said Lowe. "They were living off a number of other legacy advantages. When the organisation starts to lose its way because it hasn't had the right investment or made the right decisions, it doesn't instantly make bad cars."

"The car you produce and its performance is a function of the organisation, people, equipment, technology, software, all of your knowledge deployed into this product. If you've got a slow car, it's not that you've got a slow car, it's that you've got an organisation that makes slow cars. So, you have to fix the organisation, and it's a long, long process."

**Lowe talked about keeping a lid on how good Mercedes was in 2014 but was a bit more reticent about his time at Williams**



**"THE THINKING WAS IF MERCEDES  
HAD LOOKED RIDICULOUSLY GOOD,  
THEN SOMETHING WOULD BE  
DONE ABOUT IT"** **PADDY LOWE**

# F1 MASTERMIND

Your chosen specialised subject:  
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- Q1** Of the 150 American drivers to start world championship F1 races who has started the most: Mario Andretti or Eddie Cheever?
- Q2** How many world championship F1 races has Imola now held?
- Q3** True or false: Ferrari never managed to win an Australian GP at Adelaide?
- Q4** Kimi Raikkonen last won a GP in 2018, but how many races did he lead that season: 2, 4 or 7?
- Q5** At which six circuits on the 2021 calendar has Fernando Alonso never scored an F1 podium?
- Q6** Which race does Lewis Hamilton have to win this season to hold outright the record for the most F1 wins at one circuit?
- Q7** Which three drivers won a world championship F1 race driving a March?
- Q8** Williams won its first constructors' championship in 1980, but who finished second that season?
- Q9** Including the 2021 Portuguese GP, how many F1 starts in total have been made by members of the Schumacher family: 469, 489 or 509?
- Q10** Who won the 1957 Pescara GP, run over F1's longest ever circuit at 16.031 miles?



**1** Cheever (132 to 128) **2** 29 **3** False, Gerhard Berger did in 1987 **4** 7 **5** Baku, Paul Ricard, Red Bull Ring, Sochi, Mexico City, Portimão **6** Hungarian GP **7** Jackie Stewart, Vittorio Brambilla, Ronnie Peterson **8** Ligier **9** 489 **10** Stirling Moss



# THE F1 ANALYST

BEN EDWARDS

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PICTURES  **motorsport** IMAGES

## MONACO HOSTS HOMECOMING STREET PARADE

**Formula 1 is returning to** the streets over the next few weeks, something we have missed watching for a while. The Olympic Park circuit at Sochi reminded drivers of concrete walls and tight corners in September last year, but it's not a true street course and there were no others on the COVID-limited calendar of 2020.

Monaco and Baku are about to remind us how minor mistakes can have big consequences. Margins for error are tiny and track limits that are normally defined by Race Control become less of an issue when they are marked by solid barriers and buildings.

Racing in Monte Carlo also increases the tension through the sheer honour of winning such a prestigious event. Over the years there have been plenty of surprise results – from Daniel Ricciardo's opportunity lost in 2016 due to confusion over tyres in the pits, to his victory in 2018 despite a massive drop in power.

Olivier Panis and Jean-Pierre Beltoise celebrated their only career wins assisted by tricky

conditions, which can always arise at the harbour-side layout. Yet what is fundamental to success is building a rhythm from the first moment of practice on Thursday and extending it over the full course of the weekend.

This year there will be an hour less track time due to the limitations on free practice, which will be tough on Yuki Tsunoda. He will be learning the layout for the first time, unlike the other two rookies: Mick Schumacher and Nikita Mazepin, who both raced Formula 2 in Monaco.

For Schumacher, this will be a big weekend of attention and folklore. His father won this race five times, but also courted controversy when he purposefully crashed out in qualifying in an attempt to prevent Fernando Alonso snatching pole in 2006. Michael went on to top the qualifying times in 2012 – the one and only occasion he did so after his Mercedes comeback, but a five-place grid penalty from the previous race robbed him of the chance to start with an empty road ahead.

That was the last time that a driver over 40 set the outright pace in qualifying in F1. It's a long shot, but perhaps Alonso can return the compliment as he looks forward to his own 40th birthday. Twice a polesitter and twice a winner in Monaco with Renault and McLaren, Fernando pipped Lewis Hamilton to pole in 2007 by a tiny margin when they were team-mates and Lewis was enjoying his first F1 weekend skimming past the Swimming Pool.

Alonso is a canny racer and will make the most

of any opportunities, but there are others outside the more regular winning circle who could create a surprise at Monaco. The last time F1 visited his home in 2019, Charles Leclerc set the pace in final practice and was set to fight for pole position. Sadly, Ferrari dropped the ball in the first stage of qualifying by estimating his initial lap to be sufficient to progress to Q2, before discovering it wasn't...

Leclerc's performance was extremely impressive considering the power advantage of that year's Ferrari had less of an influence on the short straights. His surge from 15th on the grid was a joy to watch – until he clipped the barrier at La Rascasse and threw it all away.

Like Alonso, Sebastian Vettel has won the race twice with different teams, but his chances of becoming the first competitor to make it three wins with three separate marques seem pretty remote unless his Aston Martin responds well to a high-downforce package.

McLaren's Daniel Ricciardo will be another outside bet, having scored a total of four podiums over the years, but ultimately the battle is likely to be between Mercedes and Red Bull; Hamilton vs Verstappen delivering a duel through Casino Square.

Max has not had a good time of things in Monaco, despite

showing fantastic pace. Practice session crashes have twice scuppered his qualifying opportunities, and he smacked the barrier at Massenet when climbing the field in 2016. He hounded Hamilton in the final laps two years ago and made a brave attempt to pass at the chicane that didn't quite work. Despite finishing second on the road, a penalty from an earlier incident pushed Max back to fourth, which means surprisingly he has yet to score a podium finish at this most famous of F1 races.

Strangely enough, Max has also failed to finish inside the top three at Baku. The street circuit with one of the longest flat-out sections of any circuit on the calendar provides a different test. Slow-corner agility is crucial, but loading up downforce costs time in the final sector. Red Bull recorded a valuable victory in 2017 with Daniel Ricciardo, but a clash between the Australian and Max during the following year's race cost the team a potential double podium.

The opportunity for redemption is there; Sergio Perez has enjoyed two podium finishes in Baku and Max has learnt the hard way that key errors cost points. The next two weekends could be fundamental to Verstappen's title aspirations. He has always shown great pace on street tracks but has never won a grand prix on everyday roads; he needs to correct that statistic. Max has always struck me as a streetwise character. Let's see if he can live up to that billing.

Alonso's second Monaco win was with McLaren in 2007, a year after his success with Renault



The only time Michael Schumacher was quickest in qualifying during his second spell in Formula 1 came at Monaco in 2012

Ricciardo put the disappointment of 2017 behind him to win in 2018 and should put in a strong performance with McLaren



Sebastian Vettel is another driver who has won more than once around the streets of Monaco, but a repeat of this 2017 success with Ferrari seems unlikely



Leclerc's superb recovery drive in 2019 ended when he clouted the barriers at Rascasse



Verstappen hunts down Hamilton in 2019, but an earlier penalty means Max still has no Monaco podium



# UNDER THE HOOD

PAT SYMONDS

PICTURES



a balance device that suspended the model from the roof.

The balance itself was a mechanical device not unlike a weighing machine, able to measure six forces and moments which it did by moving balance weights on a beam until equilibrium was achieved. Pressures were measured in the model by smallappings in the underbody and wings, which were connected to a water manometer. Data acquisition in those days consisted of writing down the forces and photographing the manometer.

Today's windtunnel is fundamentally the same, but the level of sophistication is beyond recognition. The advent of complicated electronics and computer control has allowed much more numerous

and precise measurements to be made.

The models themselves have grown from the unsophisticated quarter-scale devices of my early Toleman days to 60% items of precision engineering.

To build a model today from scratch would cost around half a million pounds, such is the level of instrumentation and exactitude. Tyres have evolved from machined simple shapes to actual-scale pneumatic tyres that deflect under load in exactly the way their full-size cousins do, and the load on them is controlled by suspension loading devices.

The tunnels themselves have grown in size, with working sections typically around 15 square meters, plus fans requiring up to 3,000kW to drive the air at full speed. Naturally, this doesn't come cheaply. Not only would a tunnel probably cost around £50m to build today but running costs, including staff and model production, would add £6m or £7m before you have employed any aerodynamicists. Even the electricity bill for the tunnel would be over £1m a year.

With this level of investment, and the undoubted returns that the experimental process provides to car performance, why would the teams be looking at banning their use? The answer lies perhaps in two areas. Firstly, the costs are unquestionably high. A new team unable to raise the capital required could rent time in a tunnel, but this comes at a cost of around £100,000 a day.

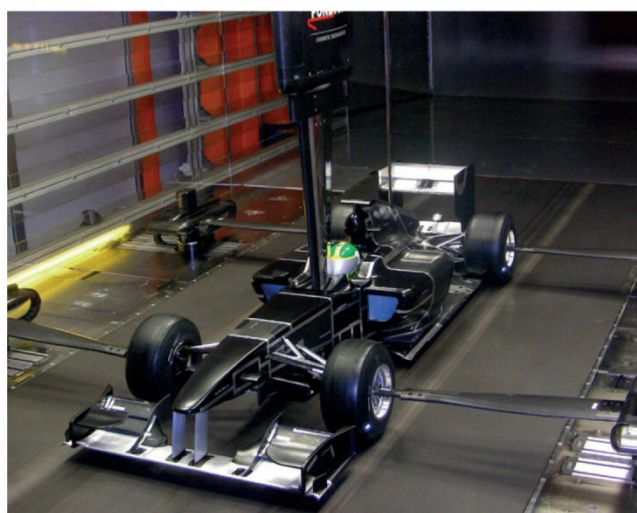
Secondly, it is only a matter of time before someone builds a test facility that overcomes some of the shortcomings of current tunnels. While regulations may limit what can be ►

## THE END IS COMING FOR WINDTUNNELS

**The windtunnel has been** an essential tool in the development of F1 cars for around 50 years, and it is said that Brabham used the then-new full scale windtunnel at MIRA as early as 1964. Since the 1980s it has been the primary tool in adding performance to cars. The level of sophistication has developed enormously since those early days.

It might come as a surprise, therefore, that eight of the 10 teams recently agreed that a notional target of eliminating the use of tunnels 10 years from now should be pursued by the FIA. Before discussing what might have led to such a strategy, it is perhaps worth examining how windtunnel testing has developed over the years.

One of my early tasks on joining my first F1 team, Toleman, was to set up and undertake a windtunnel programme. Previously, the car's design had not benefitted from any aerodynamic research. With the guidance of recruits from other teams we put together a quarter-scale model of the existing car which ran in the tunnels at Southampton University and Imperial College.



**Windtunnels have been a**  
**an essential part of F1 car**  
**design for a long time but**  
**their days could be numbered**

These were the only tunnels with a moving ground plane, a device like a large conveyor belt that moved underneath the stationary model and, together with a blown airflow, represented conditions encountered by a car moving over a stationary road and through the air.

The models were unsophisticated. They were made from aluminium and Jelutong: a natural wood from Malaysia that was relatively easy to work but had exceptional dimensional stability. The wheels were machined from nylon and ran on external axles attached to the side of the tunnel, so as not to interfere with the forces that were generated by the model. Forces were measured by



presented by

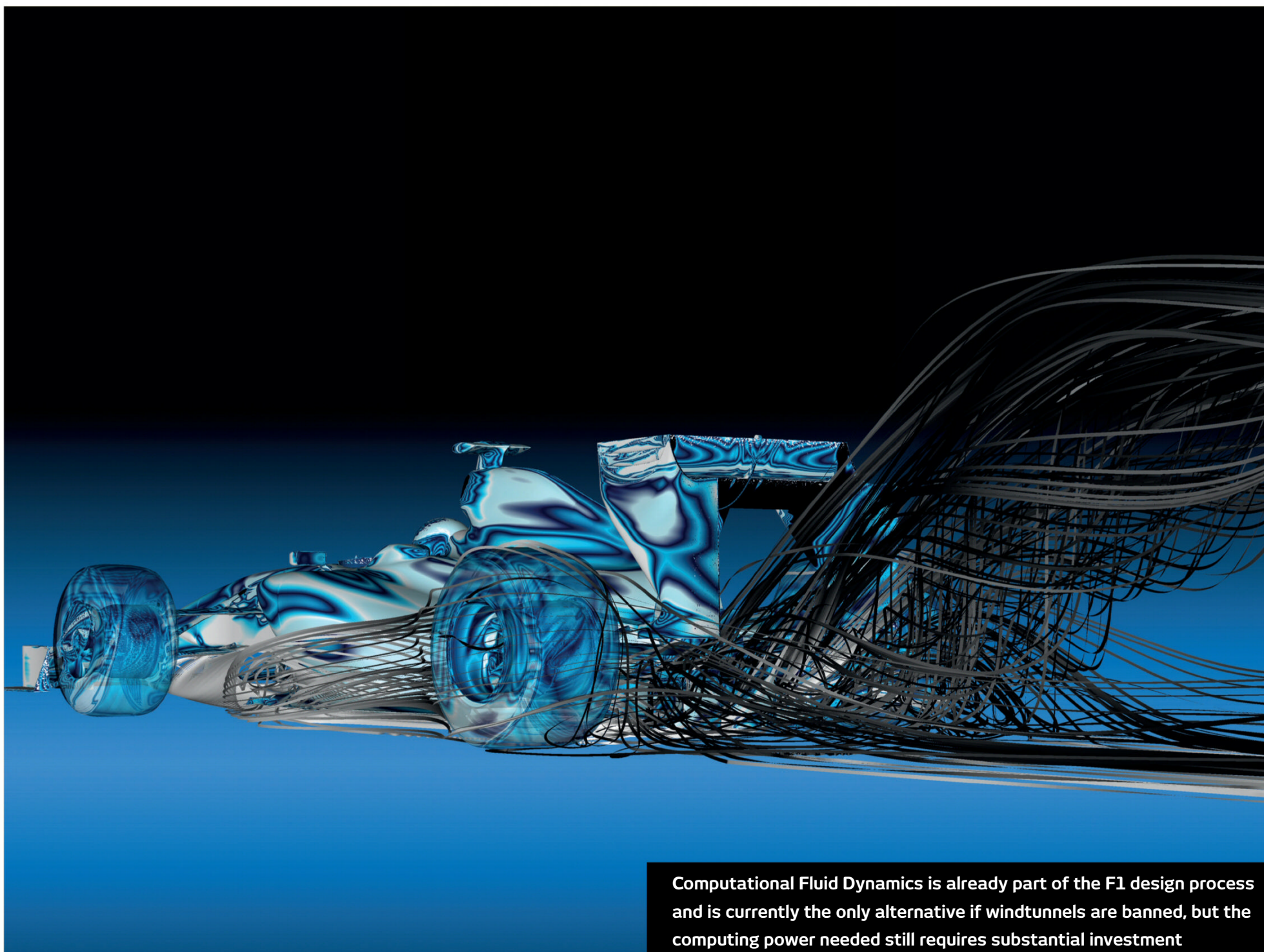


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Computational Fluid Dynamics is already part of the F1 design process and is currently the only alternative if windtunnels are banned, but the computing power needed still requires substantial investment

done, an ultimate tunnel would encompass the curved flow that a car experiences when rounding a corner on a track. Or it may even be that the model is moved in a large 3D space over a scale replica of the race track. One can imagine that either solution would make the already enormous costs of windtunnel testing minute by comparison.

So, what are the alternatives if tunnels are banned? The answer is Computational Fluid Dynamics (CFD), a science teams are already heavily invested in. Over the last few years, the fidelity of CFD has improved enormously through better computer codes and more powerful hardware, allowing ever more detail to be simulated.

The move to cloud computing should allow teams always to be running on the latest hardware, with the only limit on computing power being financial or regulatory.

CFD has advantages and disadvantages. To get accuracy, the virtual models need to be extremely complex. CFD works by solving a large number of simultaneous equations, over 300 million in some cases, therefore giving a large number of solutions which allow the airflow to be inspected in detail at any point on or around the car. This level of insight is simply not available in a tunnel,



**“THE FIDELITY OF CFD HAS IMPROVED ENORMOUSLY THROUGH BETTER COMPUTER CODES AND MORE POWERFUL HARDWARE”**

even with advanced flow visualisation techniques.

The downside is that only one attitude can be examined in one run, making it difficult to produce a full aerodynamic map of the car. Advances in machine learning could transform this, however,

with the ability to deduce a full map from a relatively small number of points a realistic goal.

CFD can take the place of windtunnels, the question being not if but when. Is 10 years optimistic? Time will tell.

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# STRAIGHT TALK

MARK GALLAGHER

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## FORMULA 1 IS BEING OUTDONE ON DIVERSITY

**You have to hand it to** Alejandro Agag. When it comes to launching topical, eye-catching new motorsport series he's good at reading the room. He launched Formula E in 2014, back when electric cars were still a novelty, successfully capturing both the imagination and investment of car manufacturers.

Never mind that BMW has decided to exit the series, tersely stating that when it comes to battery electric vehicle technology the Munich manufacturer 'has essentially exhausted the opportunities for this form of technology transfer.' Nor that Audi has followed suit, shifting its focus to the Dakar Rally where it will run an entry featuring an all-electric drivetrain, its battery pack charged by a TFSI engine acting as a generator.

Agag's already moved on too, promoting environmental sustainability through Extreme E – with its electric, off-road, Dakar-style buggies competing in remote locations.

Lining up teams from Mssrs Hamilton, Rosberg and Button, while attracting rally legends

including Sébastien Loeb and 'father' Sainz, certainly grabbed headlines. Shipping a new motorsport series around the world to educate audiences about the impact of environmental pollution and man-made climate change is a tougher sell. David Attenborough and Greta Thunberg have already delivered that message.

Extreme E is certainly innovative, however, though perhaps most usefully in the decision to mandate a man and woman in each driver line-up. Cristina Gutiérrez, Catie Munnings and Mikaela Åhlin-Kottulinsky may not yet be household names, but along with the other female competitors they have strong motorsport CVs.

Agag's vision ensures that women are given the same opportunity as men. I suspect We Race As One might even have been a great marketing campaign for Extreme E were it not for the fact that Formula 1 got there first.

Black Lives Matter and Lewis Hamilton's campaign for racial equality might have taken centre stage last season, but Formula 1's decision to launch #WeRaceAsOne always had a broader target. As FIA president Jean Todt said at the time, it includes, "the fight against

any form of discrimination and notably on account of skin colour, gender, religion, ethnic or social origin. We must promote diversity in motorsport."

At Paul Ricard in June, we will see concrete evidence of Formula 1's intentions when the 2021 W Series kicks off. In a breakthrough deal announced last December, all eight rounds of the women-only series will support F1.

It's somewhat ironic that the French GP will mark the opening of this new chapter.

At Reims in 1958, the race director informed F1's first woman racer, Italian Maria Teresa de Filippis, that she could not compete because, "the only helmet a woman should wear is the one at the hairdresser's".

W Series' boss Catherine Bond-Muir, who also chairs Motorsport UK's Equality, Diversity & Inclusion committee, is ecstatic about the prospect of racing in front of F1's teams, media and sponsors.

"In our second year we are going to be racing on the largest global motorsport platform," she told me. "It does not really get much better than that."

Inaugural champion and Williams F1 development driver Jamie Chadwick returns to defend her title and grab a handful of superlicense points. She's probably looking forward to it – after watching her Extreme E partner, ex-F1 racer Stéphane Sarrazin, destroy their Veloce Racing entry in the inaugural Desert X Prix she will no doubt be glad to have the chance to win on her own...



**Three of the Extreme E competitors:**  
Gutiérrez (top), Munnings (middle) and Åhlin-Kottulinsky (bottom)

# F1 AND THE APPLIANCE OF SCIENCE

How Formula 1 is transforming its image – and its income – through technology

WORDS JONATHAN NOBLE PICTURES  **motorsport** IMAGES

Over the past decade Formula 1 has been beset by negativity from within and without. It's not too much of a stretch to say that it's undergone an identity crisis brought on by changes in the wider world as it fights to retain and build its audience share.

Cost inflation ran rampant. The screaming V8 engines, such an important part of the draw for established fans, made F1 an obvious target for a growing movement which felt it was just a gas-guzzling waste of resources. Buffeted by economic slowdowns and the pressure to abandon fossil fuels, the formerly free-spending car manufacturers fled outright or grew disinclined to spend. Sponsors looked at F1's declining TV audience and fogeyish dismissal of social media, sensed a commercial rights holder living in the past, and spent elsewhere.

There have been casualties, controversies and sacrifices along the way, but this picture is now changing for the better and the results are tangible. The cost cap is sweeping away F1's

money-pit image, making it investable once again. Embracing hybrids might have alienated those who prize noise but it has placed F1 at the forefront of technological innovation in this space – arguably seeing off Formula E, which is losing manufacturers at speed. And a more enlightened attitude to engagement via new media channels, including Netflix, is growing the audience.

Below the level of governance and commercial rights holder, a new generation of team leaders has accepted a fundamental truth their predecessors couldn't: the era of the big-ticket title sponsor is over. Return on investment is more measureable and rate cards have had to evolve to suit this new commercial reality.

The net result of all the joined-up thinking is that F1 is attracting new sponsors, which is vitally important for its health. What's been particularly noticeable in recent months has been the arrival of high-tech sponsors eager to exploit what marketing wonks delight in calling 'synergies'. These companies not only want to build brand



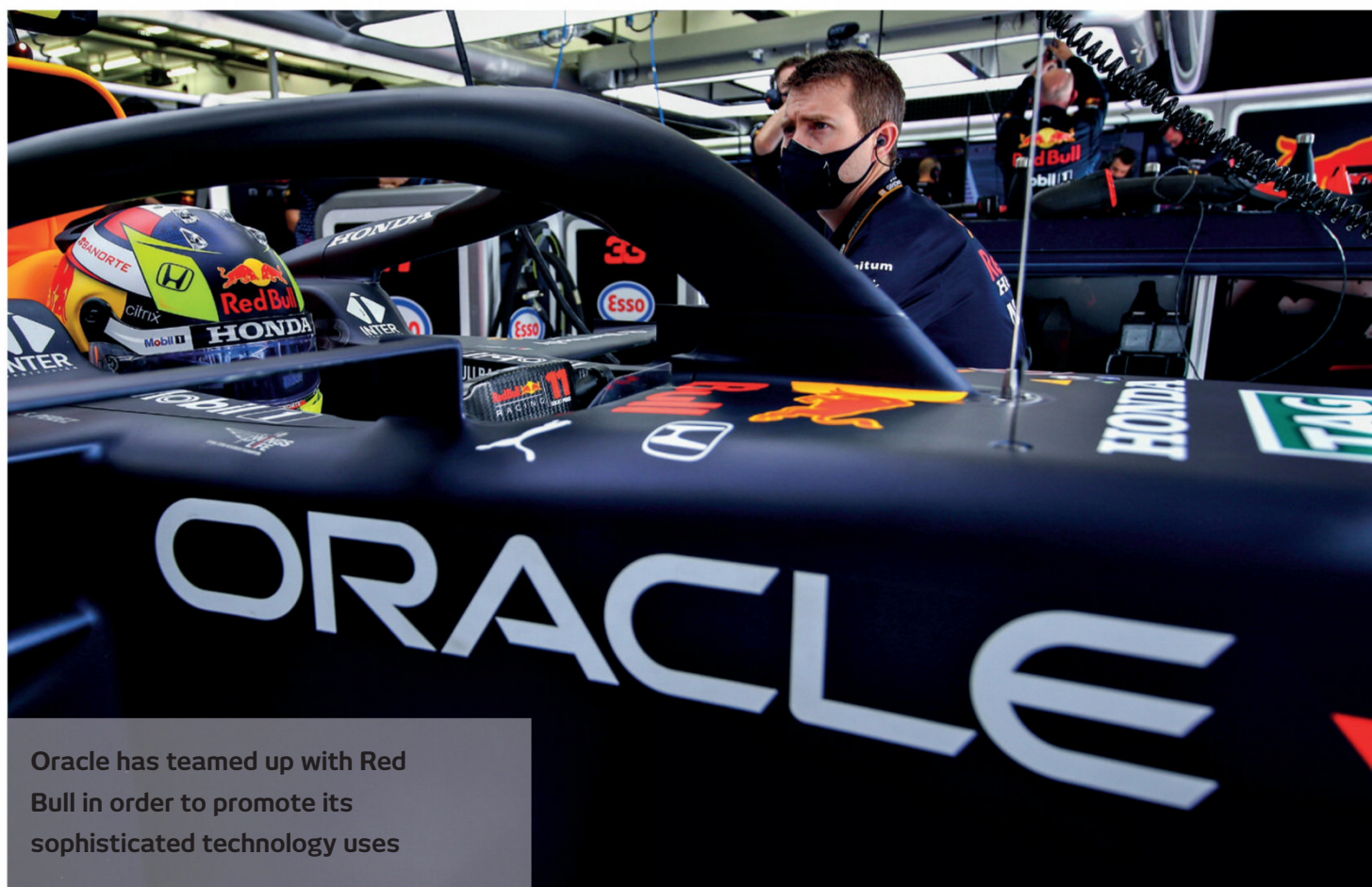
Relatively unknown US tech company Cognizant has come in to F1 as a major partner to Aston Martin

equity by plastering their logos on the cars and drivers, they also bring products and expertise which can benefit team operations.

Some of the names are relatively new, others are existing ones looking to re-establish their credentials in a changing landscape. To name just three of the recent arrivals, there's Aston Martin title sponsor Cognizant, a 23-year-old IT, security services and tech consultancy company; Red Bull partner Oracle, one of the time-served big beasts of the software industry; and TeamViewer, which specialises in remote connectivity software, is now Mercedes' third largest sponsor.

Mercedes boss Toto Wolff attributes this influx to wider changes which have made F1 more appealing, relevant and investable. The shift to hybrid powertrains is just one of the factors to provide this impetus, he reckons – another is the way data has become part of the story, packaged into the TV coverage along with a greater focus on explaining the effects of car development.

“I think foremost F1 stands for its historic



Oracle has teamed up with Red Bull in order to promote its sophisticated technology uses



values,” says Wolff. “The best man in the best machine wins. But it has switched from a gladiator sport somehow into fighter jets. Add to this the sustainability story that we can be really proud of because of the innovations that we bring to market in other industries.

“On the other side there is the case that the technology of high-tech companies can accelerate our own performance. It's moved beyond the sticker on the car to a credible joint mission.”

Car manufacturer largesse cushioned the financial blow of cigarette sponsorship bans but teams have now had to adjust to the idea of operating a broad portfolio of smaller sponsors rather than relying on a handful of big-name big spenders. Sponsors were contributing product as well as hard cash long before Colin Chapman scandalised the world of motor racing by painting his Lotus 49s the red and gold of Player's tobacco. Technological development has simply created more possibilities – that dreaded word ‘synergies’ again – beyond fuel ‘n’ lubes ‘n’ sparks.

Data is now a key battleground as resource restrictions have forced teams to accomplish more with less: fewer hours in the windtunnel, caps on Computational Fluid Dynamics research, and less time on track. Being able to use data to optimise on-track performance or generate race-winning strategic insights under time pressure is a massive sell for technology companies.

It's no coincidence, therefore, that so many of these new sponsors have product to deploy as well as money to spend and an image to build. Cognizant is an unfamiliar name despite coming to market via an IPO in 1998. It's eager to position its IT expertise as a fundamental element of Aston Martin's rebirth narrative. Oracle is the second largest software company in the world, ubiquitous enough that you might think it doesn't need the publicity, but it's been around since 1977 and needs to establish leadership in new business lines. Its partnership with Red Bull gives its machine-learning project a global marketing presence as well as a test bed.

“Being good with data and analytics and machine learning is really a core competency of every Formula 1 team now,” says Oracle chief marketing officer Ariel Kelman. “You get this a great platform for promoting sophisticated technology use cases, to what's already a massive fan base around the world that's now becoming a very fast-growing sport in United States for a number of reasons, not the least of which is the Netflix phenomenon. You're going to see more technology companies look at this as a real big part of their strategy.”

“Win on Sunday, sell on Monday” has long been the foundation of motor racing's commercial appeal. But now more than ever that maxim doesn't just apply to the car showroom.



# { UPDATE } { REQUIRED }



Life's tough when you're partnered with the greatest driver of your generation. We've seen five distinct versions of **Valtteri Bottas** at

Mercedes as he's tried to fulfil his own ambitions while being a consummate team player – two difficult, competing missions which have been challenging to reconcile. Speaking exclusively to *GP Racing*, Valtteri doesn't hold back about his highs and lows... and why he still believes he can be world champion

WORDS STUART GODLING

PICTURES



**motorsport  
IMAGES**

AND MERCEDES



Since joining Mercedes at short notice to replace Nico Rosberg ahead of the 2017 season, Valtteri Bottas has been a key enabler of four world titles for Lewis Hamilton. But was that how Bottas saw his own career panning out? Probably not.

So what, apart from Hamilton's once-in-a-generation talent, has held Bottas back? He's fast, yes, but not always at the right moment. Marginal errors and slips of focus have proved costly, as he's the first to admit. For all that Finnish reserve, Valtteri is an engaging and brutally honest personality – which he vividly demonstrates as we walk through the five phases of his Mercedes career and pitch the question on everyone's lips: what does he have to do to stay in the game?

## { BIG-TIME BOTTAS }

When Mercedes called upon Bottas he was five seasons into his F1 career (one as a Williams test driver), with nine podiums to show for it. While neither an established race winner or unproven hotshot, he had plenty going for him: he'd shown well for Williams when that team received a boost from swapping to Mercedes power units at the start of the hybrid era; he was available, since Merc boss Toto Wolff was involved with his management; and perhaps most importantly he was seen as an apolitical team player, a key asset given the strife between Hamilton and Rosberg.

"It was an important stage of my career and a big thing for me," Bottas says. "I knew I'd be in with a chance to fight for wins and the title. It was harder to adjust than I thought. It felt welcoming and supportive, but there was a different way of working with the engineers, and especially getting used to the car, which was completely different in terms the way it behaved mechanically. I had to change my driving style, but I feel quickly I became a solid part of the team."

When drivers move teams they often like to import select members of their previous inner circle, particularly race engineers, to reduce their exposure to unfamiliarity. But Bottas didn't, choosing to plug into the established 'Team Rosberg', including race engineer Tony Ross.

"It was deliberate," explains Bottas, "because I knew there were so many new things for me to learn. I didn't want people to come with me and be learning the same things as well. I had a really experienced engineer [Ross] who had worked with Nico and been with the team a long



Bottas found the switch from Williams to Mercedes much harder than he had anticipated, but still managed to win three times with his new team

time. It was my decision to have the people from Mercedes so they could coach me on it."

Three victories to Hamilton's nine might seem underwhelming in the context of Mercedes' dominance of preceding seasons, but there are mitigating circumstances beyond the business of adjusting to a new car and team. Hamilton also found it tricky to access the full pace of the 'diva' Wo8, and Bottas outqualified and beat him in Russia, the fourth round.

By then, though, Bottas had already been called upon to moderate his pace during the season-opening Australian GP so as not to pressure his struggling team-mate. In Bahrain he was ordered to move aside for Lewis twice and when Bottas won in Austria, he did so with Vettel tucked under his rear wing and Hamilton fourth, so the issue of team orders went unbroached. If Bottas thought he'd be competing on an equal footing, he faced a sharp recalibration of those expectations.

# { WINGMAN } WOE

Bottas's second year with Mercedes brought challenges he's arguably been trying to surmount ever since, and began to ink in the perception that the team sees his role purely as the compliant number two. F1 insiders describe such scenarios as "Coulthard moments", referring to David Coulthard's experiences as team-mate to Mika Häkkinen at McLaren, and his realisation that his status as number two was baked into the system from team principal downwards.

"Okay, it started with some setbacks," acknowledges Bottas with considerable understatement. "Then it kind of got even worse towards the end of the year. And I remember the end of the year as being *really* tough to deal with.

"Obviously, week after week when things don't go right and you get beaten, you have a bit of bad luck as well, and not having a single race win in the whole season... I could see that it was really affecting me, that I wasn't driving at my best any more. And, you know, confidence goes down, enjoyment of the sport disappears."

The headline-grabbing calamity of the 2018 season-opener was a strategic one, as Mercedes' 'finger trouble' on the calculator squandered a certain Hamilton victory. Bottas's miserable race – eighth from 15th on the grid after crashing in Q3 – flew slightly under the radar as a result. But he finished second in Bahrain as Hamilton was hobbled by a grid penalty, and then could have won in China (another day when Bottas had the car dancing to his tune and Hamilton didn't) had Mercedes not sat on its hands during a Safety Car period and allowed Red Bull to make a race-winning strategic gamble. Coming into the Azerbaijan Grand Prix, Bottas was just five points behind Hamilton, but then a puncture dropped him out of the lead with the chequered flag virtually in sight.

In hindsight, it's easy to see how this season got under Bottas's skin, and why Mercedes was in such a hurry to impose team orders as the races ticked by. Ferrari seemed to have the faster car and Sebastian Vettel was leading the championship.

Bottas was demonstrating a propensity to lose focus and make small mistakes which had costly outcomes, plus he seemed to be a magnet for bad luck of the pratfall kind: he picked up the puncture in Baku by dint of being first on the scene as race leader, hitting debris left by others colliding on the previous lap.

Afterwards he spoke of seeing the sheer

disappointment on the faces of his team, retiring to his hotel, falling to his knees and "crying like a small baby". Next time out, in Spain, Bottas finished second to Hamilton by a yawning 20-second margin – on a circuit with which every driver is so familiar they could navigate it blindfold. The slide had begun.

By Hungary, Bottas was looking scrappy and it was obvious where Mercedes' priorities lay. Bottas qualified second to Hamilton but the team brought him in early to cover off a similarly timed stop by Ferrari's Kimi Räikkönen, preserving track position at the cost of a disadvantageous tyre strategy. In effect both teams had burned their number twos in the bigger game of bluff and counter-bluff. Later on, Bottas clattered into Vettel and Daniel Ricciardo in separate incidents, earning a penalty from the stewards and a patronising description from Merc boss Toto Wolff as "a sensational wingman" for Hamilton.

If that stung, worse was to come in Russia, where Bottas qualified on pole and was assured in a pre-race briefing that if he were to be

leading a Mercedes 1-2 he would be allowed to win unless the team was under threat. Come the race, Mercedes blew its pitstop timing once again and Vettel undercut Hamilton for second place, Bottas had to baulk the Ferrari to help his team-mate get a run, and Hamilton blistered a rear tyre retaking the position. Then came the infamous "Valtteri, it's James [Vowles, chief strategist]" radio message in which Bottas was ordered to move over. Interviewed in the most recent series of Netflix's *Drive to Survive* documentary, Bottas admitted he was so upset he considered quitting Formula 1.

"I managed to survive until the end [of the season]," Bottas tells *GP Racing*. "I still tried to give it all I had every weekend, but once the season was over I was really tired. Physically, yes, but mentally it was tough.

"All the way until early January I was thinking should I call the team and say, 'OK, that's me, job done.' But then it was like a switch I found: basically, fuck it, I'm not gonna give up. I had to see the big picture, that if I quit now I would regret it all my life." ▶



2018 started badly for Bottas and his season never really recovered. After the Russian GP, he even contemplated quitting F1 altogether



# {“TO WHOM IT MAY CONCERN...”}

Bottas clocked in to the 2019 season sporting a scrappy beard and, as if to emphasise we were witnessing a ‘new’ Valtteri at work, he won the opening round in Australia with a precise piece of margin-gains work at exactly the right moment: the start. Mercedes had qualified 1-2, with Hamilton ahead, but when the lights went out it was Bottas who managed the delicate interplay of clutch finger and throttle foot more deftly, hooking up and surging into the lead as Hamilton experienced momentary wheelspin. This being Albert Park, where processional racing rules, that was that, and Bottas had a message for his detractors over the team radio on the slowing-down lap: “To whom it may concern, fuck you.” Social media gold in the post-Bernie F1 era.

“It had been an eye-opening winter,” says Bottas. “I think the big mistake I did in 2018 was to let the setbacks get to me.

“I learned to enjoy more things related to F1. And also, between the races, to do things that I enjoy – hobbies or other things I want to do. So just a small change in the lifestyle and, you know, the beard – the funny thing was that it just appeared because I didn’t bother to shave and I thought, ‘OK, let it stay...’

“F1 is a physical sport but in the end it’s so much about the mind, mental performance, and being in the right head space weekend after weekend. The tricky thing is that we have so many races and they’re all quite demanding – and it’s not just the weekend itself, it’s the build-up, the information from the engineers, and in the normal world the appearances and events. It’s quite... loading... and to be at your personal optimal mental state for each grand prix you need to find that flow. That’s the key – whatever floats your boat, you need to find it.”

Bottas also got by Hamilton at the start in Bahrain, but fell behind him again as Hamilton followed the faster Ferrari of Charles Leclerc through. China was a race which would come to encapsulate Bottas’s season: he qualified on pole from Hamilton but then spun up his rear wheels under secondary acceleration as he crossed the white line. The track marking was held to blame for this, although surely it was in the same place for everyone...

In Azerbaijan Bottas won from pole and had an answer to every question Hamilton posed,





**“TO BE AT YOUR PERSONAL OPTIMAL MENTAL STATE FOR EACH GRAND PRIX YOU NEED TO FIND THAT FLOW. THAT’S THE KEY – WHATEVER FLOATS YOUR BOAT, YOU NEED TO FIND IT”**

but in Spain Bottas coughed up the lead to his team-mate again despite starting from pole. Then, at Silverstone, another season-encapsulating moment: Bottas made a routine pitstop from the lead, then Antonio Giovinazzi binned his Alfa Romeo messily, enabling Hamilton to pit advantageously behind the Safety Car. Hamilton’s hard tyres weren’t expected to last the rest of the race but he proved otherwise, leaving Bottas feeling doubly stitched up.

Following the weather-induced Mercedes rout at Hockenheim, Bottas qualified second at the Hungaroring, ahead of Hamilton but behind Max



The ‘new’ Valtteri of 2019 sent a clear ‘message’ to the world in Australia but started to lose momentum from Silverstone onwards

Verstappen’s Red Bull. The Merc drivers narrowly avoided one another on the opening lap through Turns 1 and 2, before Hamilton went around the outside and completed the pass at Turn 3. A swipe from Leclerc as the Ferrari went past at Turn 4 then damaged Bottas’s front wing and consigned him to eighth at the finish. Bottas won in Japan and the USA but the damage was done.

“We started quite well,” he says, “then there were some really small things – having a bad start, losing the position to Lewis and then he got the win, or not 100% nailing the qualifying lap. Mainly it was racing related, things happening on Sunday. And then I struggled to keep the momentum I had from the beginning. I definitely wasn’t performing the best that I could.”

Once again it was a case of marginal losses, perhaps compounded by the aerodynamic philosophy of the Mercedes, which works best while leading in clear air. If you’ve given up that advantage, either to your team-mate or another rival, you’re on the back foot for the entire race. And behind-the-scenes factors may have played a part in Bottas’s occasional absences from the sharp end: late in the year he and his wife announced they were to divorce. ▶

# { WAVING NOT DROWNING }

Besides the small matter of a pandemic, 2020 also delivered another bruising reminder of the excellence of Bottas's team-mate. The season-opener, where Bottas triumphed from pole as Hamilton laboured to fourth place, both drivers nursing fragile gearboxes, was an outlier.

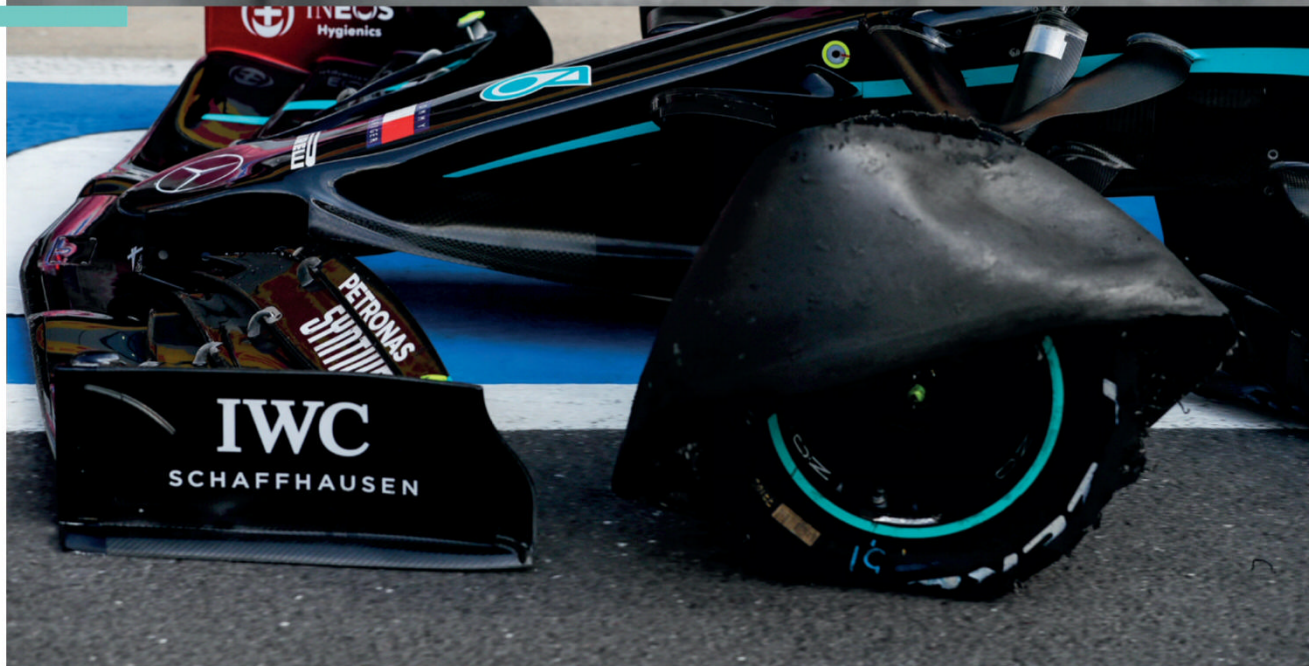
Chastened by Ferrari's improving pace in the final rounds of 2019, Mercedes had dug deep to deliver an improved car and, once its mechanical vulnerabilities were addressed, it was unbeatable until Red Bull came on song with a couple of races to run. Hamilton, too, had found a new level. His race-winning performance in Turkey, on worn intermediate tyres in uncertain conditions, and battling from a disadvantageous qualifying position, was out of the top drawer. On the same track Bottas became embroiled in incidents which damaged his steering and consigned him to a finish outside the top 10.

There were days, too, when he bore the burden of the consequences of wider issues – such as at the British Grand Prix where Bottas was one of several drivers to suffer tyre delaminations. He had to pit, dropping him to 11th, while Hamilton's tyres let go later, enabling him to win on three wheels. Then the ghost of Baku 2018 rattled its chains at Imola as, while leading, Bottas hit debris left by an earlier shunt. Of the 17 races Mercedes won 13, of which Bottas contributed just two victories.

"There are so many examples of me having bad luck, or something happening, and Lewis ending up on top weekend after weekend," says Bottas. "And for sure I'm thinking 'How does he do that?'"

"But I feel that performance-wise, it [2020] was the best year I've had in Formula 1. Looking at the numbers with the team, race by race, what happened and why I didn't win, everything was clear. Definitely not the luckiest year, but some good steps in performance and things I've learned which I can try to turn to my advantage."

After the Sakhir GP, where George Russell scored a hit while substituting for the Covid-struck Hamilton, Bottas lobbied successfully for more arm-around-the-shoulder treatment from the team in general and Wolff in particular. The team principal has been noticeably more vocal since then in encouraging Bottas over the radio at critical moments.



Despite the results, Bottas feels the 2020 season was his best yet in F1. Unfortunately, it was also the year when he probably had the most on-track bad luck

# { ALL OR NOTHING }

The 2021 season is a crunch one for Bottas, whose contract is up for renewal as Russell waits in the wings. There was talk pre-season of yet another reboot. But so far there have been few signs that Bottas has got to grips with the performance nuances in which Hamilton has the upper hand, such as tyre management. This is proving critical since the Mercedes W12 is proving to be a handful – unstable at the rear and lacking Merc’s traditional facility (sometimes a weakness) for heating its tyres quickly.

In Bahrain Bottas was critical of being given the same strategy as Hamilton, thereby providing no edge to pass his team-mate. Wolff riposted that this strategy was the only one on the table because Bottas had fluffed the start and dropped behind Leclerc. There was a noticeable *froideur* in the air. Bottas talked pre-season about being “more selfish” – was this what he meant?

“It’s important to think more about myself,” he says. “And what really is the goal in my career – which is the championship – and think less about others. You can’t change yourself. But if I look at the big picture of my career, it’s not going to last forever. If you’re with a [top] team five, six years, they expect you at least once to win the title, that’s how it goes. That’s how F1 works. And I acknowledge it completely.

“I definitely need to challenge the team when I can, in a good way. I want to make sure all the eggs are in my bowl – I want to make sure I get the better strategy.”

Clearly Bottas will not get this privileged treatment unless he can start beating Hamilton in qualifying, and the performance characteristics of the W12 aren’t working in his favour. At Imola he was fastest in the first two practice sessions but, come qualifying and colder, damper weather, the tyre warm-up issue manifested itself again and he could only manage eighth on the grid. Tyre temperature – or lack thereof – also contributed to Valtteri’s race-ending shunt, enabling Russell to attempt an opportunistic pass in his Williams. On-board images from Russell’s car suggested Bottas had run him off the road, but this perception was skewed by the curvature of the track; the stewards concluded Bottas had given ample room and done nothing wrong.


Nevertheless Russell’s claim (subsequently recanted) that Bottas had deliberately pushed him off because of who he was gained some

“FOR ME THE  
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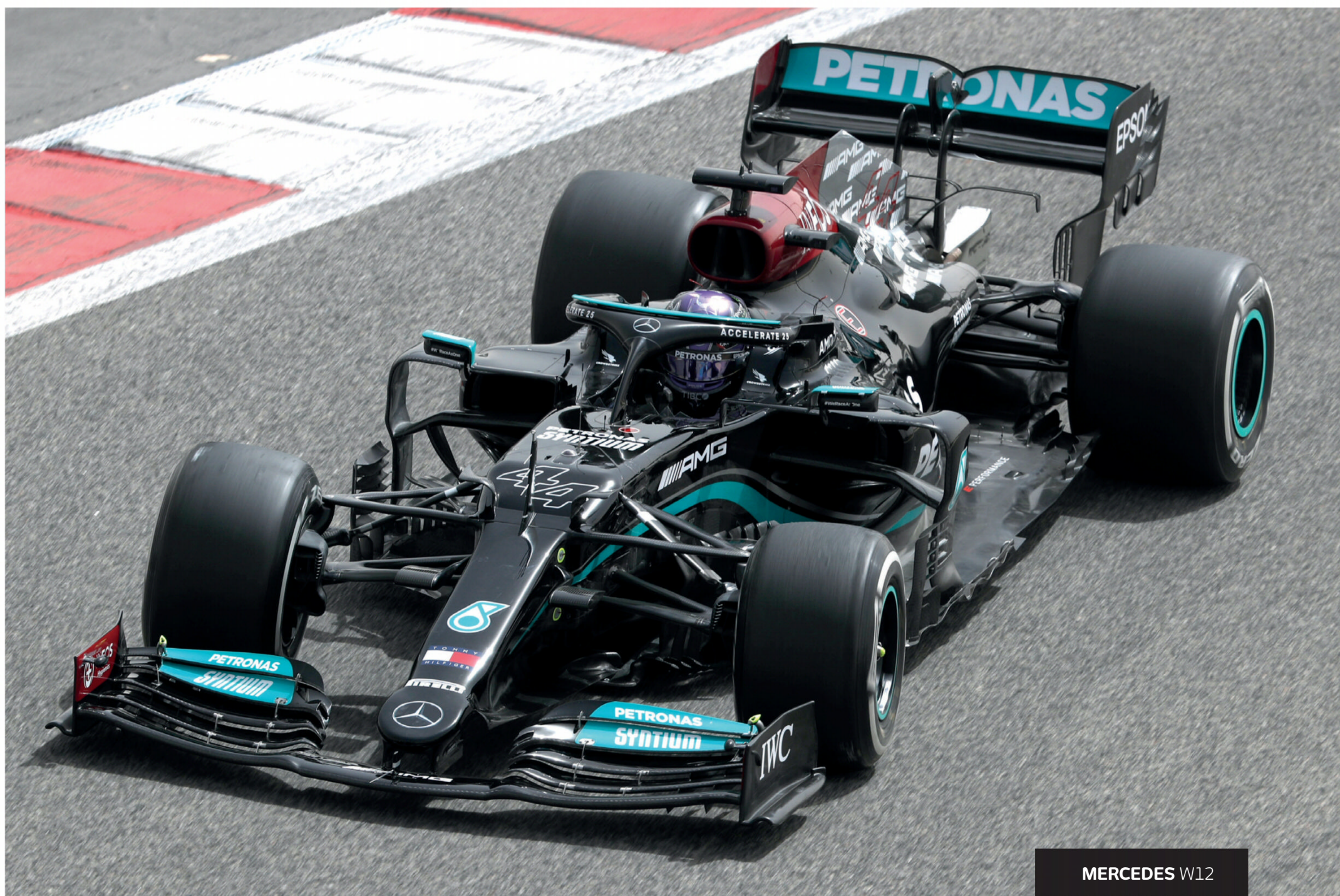
traction in the fan community, though Wolff described it as “bullshit”. While the incident and its ramifications reflected more negatively on Russell, Bottas urgently needs to up his game and get on top of the truculent W12 – especially since Hamilton is making it work relatively well.

“For me the main goal this year is to give it

everything I have,” says Bottas. “Much more than I’ve ever been able to do before. Whether it’s what I do in the race week, how much I’m demanding from the engineers, my coach, my family.

“I want to make sure that once we’re done in Abu Dhabi I look back and can say I gave it all I had left in the tank.” 





MERCEDES W12

# FLOORED —

**Aston Martin** claims Formula 1's latest technical tweaks have cost it competitiveness – and that it's the innocent victim of a regulatory stitch-up aimed at pegging back **Mercedes**. But is any of this actually true?  
It depends on who you ask...

WORDS STUART CODLING

ILLUSTRATIONS GIORGIO PIOLA

PICTURES  **motorsport**  
IMAGES



ASTON MARTIN AMR21

# — OR FLAWED?

W

ho would have thought a simple trim would cause so much outrage? At the stroke of a pen, it seems, the established order of Formula 1 has been – if not quite turned on its head – given a vigorous shake.

It's always hard to predict the outcome of regulatory changes beyond broad principles. The stated aim of the tweaks – a diagonal cut in the floor area and limits on other aerodynamic devices at the rear of the cars – was for safety, to reduce downforce loadings and not put further stress on a generation of Pirelli tyres already struggling to cope. But uncertainty lingered over what the specific effects might be when theory was translated into practice, especially since two teams employ a very different car philosophy to everybody else.

“Taking a hacksaw to a car is generally quite an unscientific approach

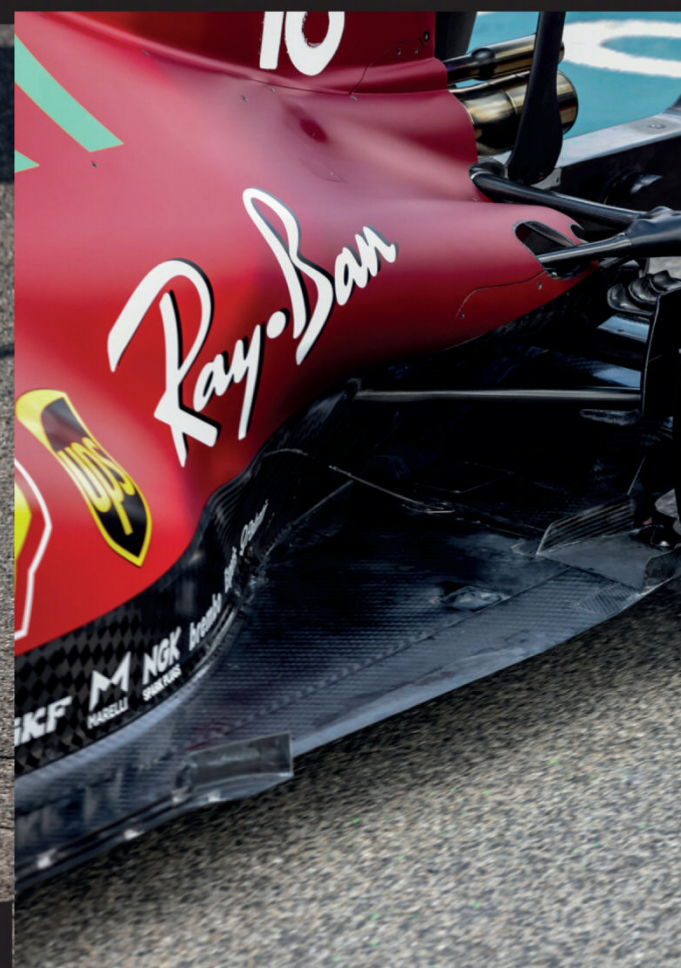
and it's not going to be even across the teams,” Mercedes chief designer John Owen told *GP Racing* late last year. “It's a bit of a lottery.”

The question was whether the trim would affect teams with ‘low-rake’ cars (Mercedes and Aston Martin) more or less than those running ‘high-rake’ cars (everybody else). On-track performance from the opening few races has fed a narrative that Mercedes and Aston Martin have been disproportionately affected – to the extent that bosses of both teams have suggested ulterior motives were at play in shaping the new rules. Aston team principal Otmar Szafnauer has hinted at a legal challenge if the FIA doesn't submit to a forensic examination of whether it followed the right processes – and then do something to make the situation “more equitable”.

“I think we get to that point [legal action] after the discussions,” he says. “I think the right thing to do is to see what can be done.” The tautological nature of that sentence scarcely diminishes the scope of the threat. ►



ASTON MARTIN AMR21



MERCEDES W12



## WHAT'S RAKE GOT TO DO WITH IT?

Just over a decade ago, Red Bull hit upon a means of generating more downforce by running its cars at an aggressive nose-down angle. The effect on the airflow under the car is like putting your thumb over the end of a hosepipe: the flow accelerates into the space beyond the obstruction. On a high-rake car this flow is accelerating into a greater volume of available space behind the leading edge of the floor, creating a more powerful low-pressure area as the diffuser ducts the accelerated air out. The result is high peak downforce, which is why other teams rushed to copy the idea – but it's also very difficult to tune and achieve consistency, especially in slow corners where the aero loads reduce proportionally. In these circumstances lower suspension loadings cause the rear end to rise beyond the diffuser's ability to 'seal' the floor and manage the flow.

The low-rake philosophy pursued by Mercedes – and latterly Aston Martin after it controversially 'cloned' the 2019 Merc – relies on having more floor, since floor area acts as a multiplier for underbody air pressure. This is why Mercedes traditionally runs a longer wheelbase than any of its rivals – up to 8cm more than Red Bull in recent years. Mercedes' lower-riding rear end requires more underbody surface area to achieve peak downforce but is less prone to 'breaking the seal' of the diffuser in slow corners, because there's less vertical deflection of the rear end.

Understanding the effect of the recent changes has been complicated by the staggered nature of their announcement. The cut from the outer floor, along a diagonal line drawn from a point 180cm behind the front axle line to 10cm inboard from the front of the rear tyre, was ratified by the FIA's World



**FERRARI SF21**



**RED BULL RB16B**



**MCLAREN MCL35M**



**WILLIAMS FW43B**

There have been a number of different approaches to the new rules surrounding the floor area at the rear of the cars, even among teams with some shared components

Motorsport Council in May last year. So too was the outlawing of the many vanes and slots in the floor which teams use to help seal the underfloor.

At that point F1's stakeholders were scrambling to mitigate the long-term effects of the pandemic, which included the postponement of a wider regulatory change planned for this year. This also entailed deferring the introduction of 18-inch wheels, and using the present generation of tyres for another year – prompting Pirelli to flag up potential safety concerns if teams unlocked more downforce. In the months that followed other measures were proposed and rubber-stamped, including restrictions on development and

on vanes around the diffuser and brake ducts.

Simulating one change in isolation is relatively straightforward, but when several are implemented at once it becomes challenging to isolate cause and effect. Opinions differed as to which philosophy might suffer more – low rake, on account of having a reduced floor area, or high rake, because the removal of the slots and flow conditioners would make the airflow more prone to stalling. Teams' options were limited since the cost-control measures obliged them to carry over the bulk of their 2020 cars' hard points.

On the face of it, the performance of Mercedes and Aston Martin over the ▶

opening races of this season seems to suggest the low-rake cars have been disproportionately affected. Both Mercedes drivers have complained of rear-end instability and poor tyre warm-up characteristics, while Aston Martin – a race winner in 2020 – has struggled to get both cars through to the top 10 in qualifying.

## HOW BIG IS THE EFFECT – IF ANY?

As is always the way in F1, the supposedly injured parties have been the most vocal. After the opening round of the season in Bahrain, Aston Martin's Otmar Szafnauer spoke of a "rude awakening" in qualifying, "when we realised, after analysing the data, that the low-rake cars were hampered significantly more by the regulation change". A pillar of his complaint was the assertion that the changes have cost low-rake teams a second per lap.

This was an incendiary claim, and one lent credence by some of the data. After all this was a circuit where, last year, Sergio Pérez was only denied a podium by a power unit failure. In terms of laptime, only three teams increased their average deficit to the pole position time in qualifying: Mercedes, Aston Martin, and Haas – the latter of which has done no development at all and is fielding less experienced drivers.

It's easy, though, to selectively interpret data to support a given argument, especially when the pool of information is limited to two grands prix as this section of *GP Racing* closed for press. While Red Bull had the upper hand in qualifying in Bahrain, especially in Turns 5-6-7 and 9-10 which transition from fast to slow, Mercedes overturned that advantage via

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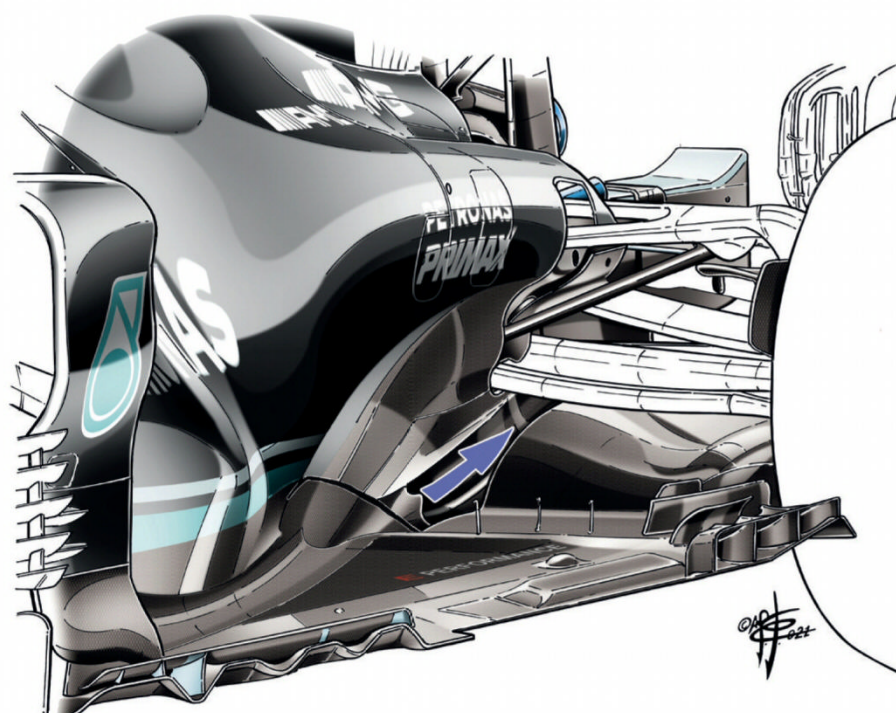
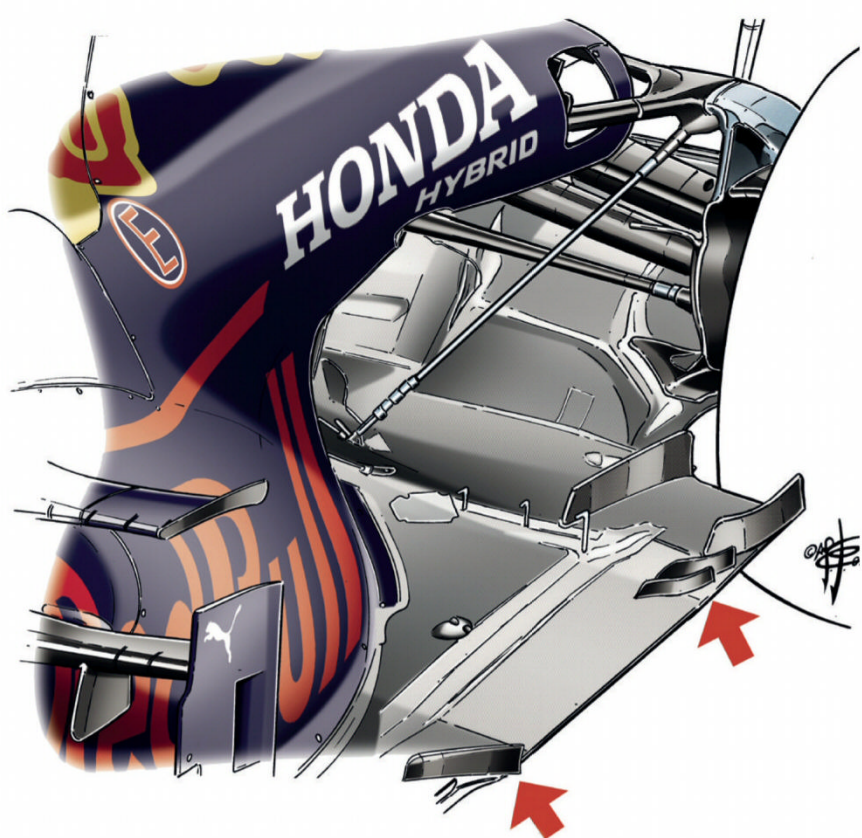
strategy in the race. Lewis Hamilton put his W12 on pole at Imola and could have won but for a critical moment of wheelspin at the start. View the 2021 season thus far through a less partisan prism and you could easily conclude that this is simply a case of fine margins, perhaps even a continuance of the latter stages of 2020 when Red Bull showed it had developed its way out of several blind alleys and made the RB16 a genuine contender.

Other variables are in play, some of which are intangible. To what extent is Mercedes' tyre warm-up issue related to the banning of its dual-axis steering system? In Q3 at Imola Valtteri Bottas lost 0.4s in the first sector because of *rear* tyre warm-up problems, resulting in a poor grid position. In the race his inability to get the medium slicks working left him open to attack from George Russell.

There have been shifts elsewhere in the competitive order; perhaps Mercedes and Aston Martin, along with Alpine, haven't adapted to the new regime as effectively as some of their rivals. Aston proved last year that 'cloning' a winning car wasn't the short-cut to success many imagined it would be. There was a protracted learning process before it exploited the car's potential. Perhaps that lack of experience with the low-rake philosophy has played a role this season, especially since Aston has taken Mercedes' 2020 rear suspension, introducing another variable. And if you were to be harsh, you could argue that if Aston had a top-drawer driver who was less finicky about car characteristics than Sebastian Vettel, the results might have been rather better...

Neither is it cut-and-dried that performance disparities between car concepts will be consistent across the season. Through linear-radius corners ▶

As well as overhauling its rear suspension, Red Bull is experimenting with fences to manage airflow around the tyres. Mercedes has redesigned the lower wishbones on its rear suspension to improve airflow (blue arrow)



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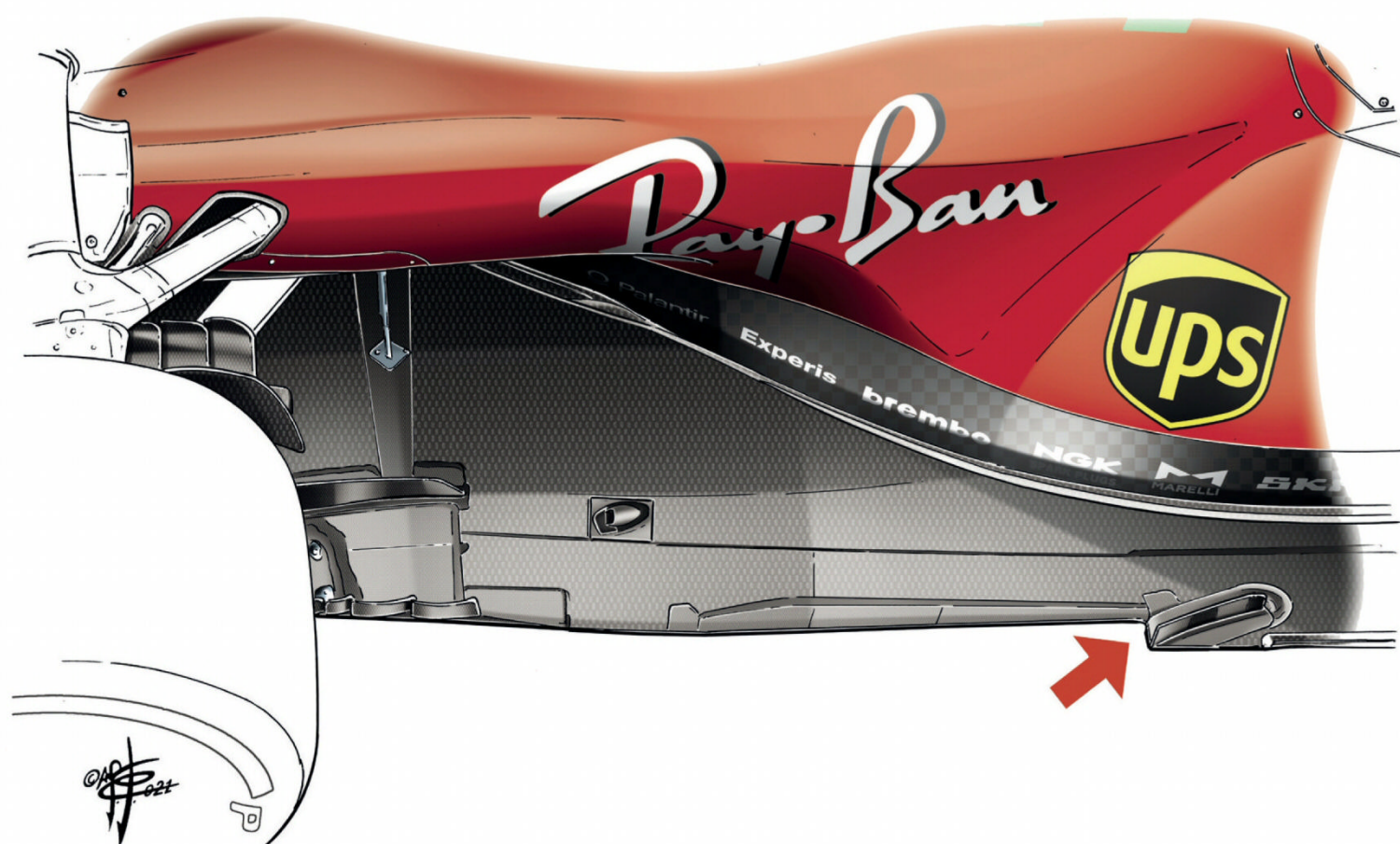
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MAGNECOR 'LEAD' WHERE OTHERS FOLLOW





At Imola, Ferrari introduced a cut-out in the floor, tested in Bahrain by other teams. It's believed the cut-out and nearby turning vane work to set up a vortex to 'seal' the underfloor, maintaining negative pressure

evidence suggests the two philosophies are evenly matched; it's through complexes where the car needs to shed speed while turning that the low-rake cars come unglued at the rear. The balance is going to shift depending on the characteristics of individual circuits. Engineers at other teams with no skin in the political game have also stepped back from endorsing the predominant narrative, particularly in terms of quantifying lost laptime.

"Obviously we're pretty much tied into the rake we ran last year," says Williams' head of vehicle performance Dave Robson. "So we didn't really look to see what the floor mods would do to a lower-rake car because it doesn't really change anything for us. So I don't know. If people really, definitely know – then good on them. But I'm not sure quite how they would."

"It's not clear that just because Mercedes and Aston Martin appear to be struggling more relative to the field, you could immediately point the finger at the rake based on just a couple of events. That's a big step to make. It might turn out to be right but it's not immediately obvious. I thought the Ferrari was fairly low-rake in Bahrain, and clearly they've made a big improvement..."

One thing engineers across the grid agree on is how critical the deformation characteristics of the rear tyres are to airflow around that area of the car. The better-resourced teams are likely to understand this quicker and develop their way out of any shortcomings. For this reason, nobody is expecting Mercedes to struggle for long.

## IS THERE A CASE TO ANSWER?

Another important question is whether, as Szafnauer claims, Aston Martin has been stitched up by changes targeted at pegging back Mercedes rather than purely for safety reasons.

"I understand the topic," says Mercedes team principal Toto Wolff.

**"I THOUGHT THE FERRARI WAS FAIRLY LOW-RAKE IN BAHRAIN, AND CLEARLY THEY'VE MADE A BIG IMPROVEMENT..."**

**DAVE ROBSON**

"Because how the rules have fallen into place last year, one can always question what the motivation was, and I think there is certainly the right to review and look at things and discuss them with the FIA, to find out what actually happened."


"That's why I respect Aston Martin's enquiry into the whole thing, and maybe things were targeted at us, and they [Aston] are collateral damage."

"I'm not a conspiracy theorist," says Szafnauer. "But it was pointed out last year by the low-rake runners that this would have a bigger effect than on the high-rake runners. And we were correct. At the time the regulations were being made this was pointed out."

Ferrari team principal Mattia Binotto remembers differently. "There is a governance in place and if you need to change aero rules, you need to go through that governance," he says.

"As Ferrari, we believe what was said about the safety reasons was the proper choice – but more than that, this choice was discussed at the time with all technical directors and the Technical Advisory Committee. We all conferred on that regulation. No one was raising at the time any concerns."

Red Bull's Christian Horner, a veteran of seeing rules changed to peg his team back, says the measures were voted through unanimously. Szafnauer says they weren't. While it stretches the bounds of credibility to think F1 teams might have been blindsided by changes to which they were party, perhaps the only way to settle the argument is to review the process.

"Since April [2020] there was a bunch of decisions, regulatory changes, tyres were introduced and obviously lots of discussion," says Wolff. "I think the nuances of that have come to a point where we can ask: was there any decision made against a particular concept of car or wasn't there? And I think that needs to be looked at." 

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The circuit will be located on the seafront in Jeddah and the layout (below) shows that the track will be long and thin. It also has the potential to be the quickest street circuit on the calendar





# FORMULA 1'S COASTAL CAPER

A new street circuit – promised to be the fastest in the world – will host the inaugural Saudi Arabian Grand Prix this year, and *GP Racing's* principal photographer Steven Tee has been to scope it out already...

WORDS STEVEN TEE PICTURES  motorsport IMAGES

Having photographed Formula 1 since the mid-1980s I've seen circuits come and go – and radically change. But it's still exciting to check out a new venue and see what's on offer, both in terms of image potential and what it's going to offer for the drivers.

I was recently in Saudi Arabia to cover the inaugural Extreme E round and detoured via Jeddah to see the venue which is going to host this year's new grand prix in the kingdom – and probably the next couple of Saudi Grands Prix too, until a permanent circuit is built near Riyadh, the state capital.

Obviously there are a lot of opinions in circulation regarding Saudi Arabia and the hosting of a grand prix here. From a speak-as-you-find point of view I found the whole experience of arriving at the airport (which is a modern edifice in the modish, sweeping Norman Foster-ish style) smooth, pleasant and welcoming. People knew about the forthcoming grand prix and were genuinely interested in

where I was from. I can't say I experienced a fish-out-of-water feeling at all as I got around, although quite a few of my expectations didn't come about.

Firstly the Jeddah seafront has a kind of South of France ambience. It's hot but also, because it's on the Red Sea coastline, there's a humidity in the air which you don't get elsewhere in Saudi Arabia or at the other grand prix venues in this region, Bahrain and Abu Dhabi. My hotel was a couple of miles down the coast from where the race is going to be held; there's a beach club opposite, and the Al Kurnaysh dual carriageway with a wide pedestrian and cycling vestibule running along the middle. An archway with a clock counts down the hours until the grand prix begins.

Since it's hot and humid out there, people tend to emerge late. Come early evening, as the sun continues its progress towards the western horizon, you see locals come out to exercise along the corniche or simply hang out in social groups under the trees strung along the seafront. The vibe is relaxed and unhurried. ▶



If you consult the maps you'll see Jeddah is quite a long, thin city, and the grand prix is part of a broader urban renewal project that aims to transform what is currently a fringe area. The majority of the buildings are new or recent, dotted through with the more traditional architecture of several mosques. Overall the impression is of the city being extended, gradually and sympathetically, towards the sea. Around four million people live in Jeddah, and nearly 35 million in the country as a whole, making this a very different prospect to Bahrain and Abu Dhabi, which are both small and relatively young. For all the new buildings there's a proper sense of history here, a feeling of being at the heart of the Islamic world (Mecca is a relatively short distance away to the east).

Jeddah isn't a high-rise city at all, and towards the north end, where the circuit is going to be, it kind of runs out. There's a

modern Hilton hotel, where I stayed, and as you go up the coast the road sweeps around a landscape in which vacant lots are juxtaposed with other new hotels, coffee shops (including several Starbucks), an amusement park, a cinema complex and a retail park with a supermarket. The aim for the Saudi Arabian GP is to spur on further development and gentrification here. The Jeddah Waterfront project is just three years old but the roads are already in place and it's these which form the spine of the circuit.

When the race moves on to a purpose-built facility in the Qiddiya sports city near Riyadh the roads will remain, so it has more in common with established street circuits such as the one in Baku rather than the abortive Korean GP. That project came freighted with plenty of glossy renders featuring apartment complexes, marinas and shopping malls in the background of the track but, to the best of my knowledge (I've not visited Mokpo recently) it's still a barely used piece of asphalt threading its way around a swamp. The Jeddah track is already well on the way towards the vision

more on roundabouts throughout the city. Apparently the inspiration came from the ancient city of Alexandria.

The track will loop around the adjacent roundabout and lagoon and come back along what's planned to be a straight – which is going to require some additional asphalt – past the Belajio Resort and the pit complex, which is now taking shape on what was vacant land. At the end of the pit straight is what will be the tightest corner on the circuit, a jink left near the recently built Radisson Blu hotel, which is where I imagine the drivers and big cheeses will stay on race weekend. It's upscale and architecturally in keeping with the region, fringed with filigree.

This section is envisaged to be a key overtaking point: the left-hander is 90 degrees, then there will be a straight which amounts to a handful of car lengths, then it will bend right again through a corner which opens out. It's a classic example of



**The archway counting down the hours until the first grand prix gets underway (above, left). There is a definite South of France feel to the location**

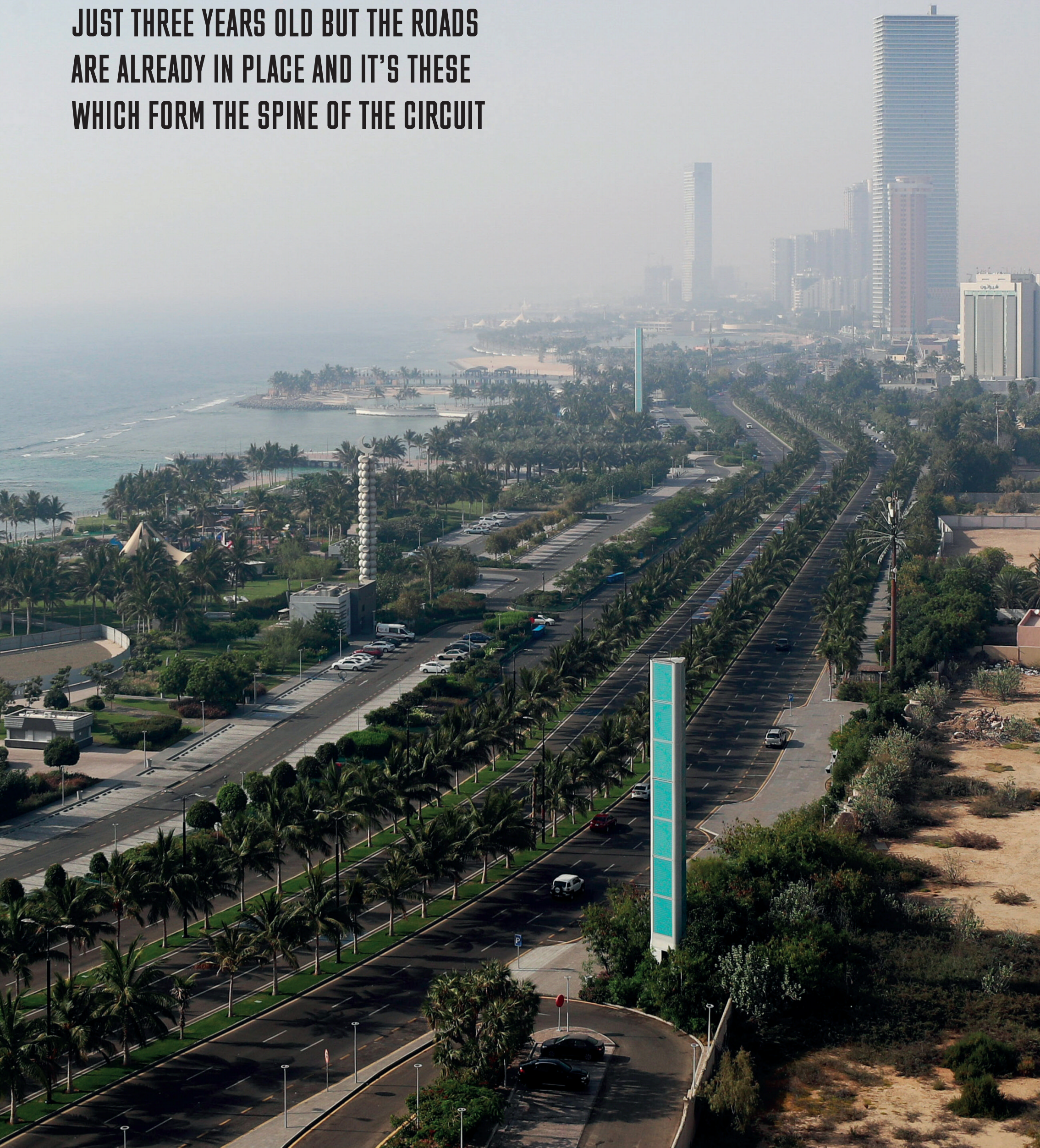
set down by the architects.

As well as the brand-new elements, the environment includes some older features. During the oil boom of the 1970s the mayor commissioned big-statement public artworks, and one of them features at the bottom end of the circuit around the final sequence of corners. Hopefully it's not an augury of what's to come later this year, since it's known as 'Accident! (Crazy Speed)' and features a giant cube of concrete in which are embedded five old sedan cars. There are 20 of these giant sculptures all along the corniche, plus

a Tilke 'booby trap' designed to lure drivers into making mistakes – braking too late at the sharp corner or misjudging throttle application on the way out. At the moment the plans call for a number of grandstands here which will enable spectators to see not only this key action area but also the pits, which will feed out onto the outside of the right-hander.

After this the track opens out into more sweeping corners, and you can see why ►

**THE JEDDAH WATERFRONT PROJECT IS  
JUST THREE YEARS OLD BUT THE ROADS  
ARE ALREADY IN PLACE AND IT'S THESE  
WHICH FORM THE SPINE OF THE CIRCUIT**





Jeddah isn't a particularly high-rise city, especially at the northern end where most of the track will be located



Whilst the bulk of the city now consists of modern architecture, there remain pockets of much older buildings

**At the top end of the circuit the Al Rahma mosque should feature as the background to pictures and TV broadcasts**



the promoters and the Tilke architects see this as potentially the fastest street circuit on the calendar. At the top end there's going to be another sweeping corner as the circuit comes back on itself, and they were just beginning to take the kerbs out here and do some ground-clearing work

for the new asphalt which will be required.

There's also a really interesting landmark here, the Al Rahma 'floating mosque'. Built in the 1980s by a wealthy local family, it features 52 domes and is set on concrete pillars driven into the sea bed, so the whole structure appears to be floating on the surface of the Red Sea. In the early evening – when the race will be running – the sun will set behind it if you're standing in the right place.

No doubt F1 TV will snap up this angle! As night falls the minaret is spotlit, a feature which will also no doubt make its way onto the broadcast.

The plan is for there to be pop-up restaurants all along this sea front area so it will be useable all year round, and provide a destination long after motor racing has packed up and moved on. If these eateries are open on grand prix weekend then the diners will get a spectacular view of the cars going through all the sweeping bends in the final sector of the track.

At the moment the plan is for the media centre to be on an island in the lagoon,

promoters are determined to make it as aesthetically agreeable as possible. And from the point of view of bringing you the best images possible, I'm assured there will be plenty of vantage points as well as 'windows' through which we photographers can poke our lenses.

Over the years we've seen tracks appear on the calendar and then disappear equally quickly, victims of commercial arrangements falling through, lack of political will, or developers being unrealistic about what can be achieved in a given timeframe. I recall stairs leading to a non-existent floor at the track in India, and arriving at Abu Dhabi's Yas Marina Circuit for the first time to find the paint still wet in places. The Saudi Arabian GP has the sports ministry and various members of the royal family backing it, and of course the state energy company Aramco is a sponsor of F1 itself. I've no doubt that we'll actually be here come




**The 'Accident' cube is just one of the interesting sculptures in Jeddah. Work has already begun on removing some of the kerbs, and the plan is for the media centre to be located in the middle of the lagoon**

which will make for an unusual but convenient working environment since it's pretty close to the pits – not always a given with street circuits. In Monaco you've got a veritable obstacle course of stairs, then into the paddock and back out again, then over a bridge (if they let you through, that is) before you can get to where you need to go. This track feels like it will require rather less forward planning to get about.

Being a street circuit, and a fast one at that, obviously it's going to be bounded by barriers and safety fences but the

December and that it will all be finished.

Then, of course, we'll be able to see if all the promoters' and architects' dreams have come to fruition in terms of the on-track action. Simulations indicate an average speed of 250km/h over what will be, at 6.175km, the second longest track on the calendar behind Spa-Francorchamps. I'm not one to wish away the season, but I can't wait for the first weekend in December... 



# TOYOHARU TANABE

It's been a long and painful journey for Honda through F1's hybrid era but as the Japanese manufacturer prepares to bid farewell to grand prix racing once more, it looks as though its blossoming relationship with Red Bull could be about to come good...

**Let's start by talking about the 2021 engine specifically. What's your feeling about what you've produced and how it's performing?**

We introduced a new PU for this year and updated many areas of the ICE (internal combustion engine), and then some areas in the ERS (energy recovery system). So, we improved our ICE performance, and ERS performance. And then the size of the ICE [is reduced], so kind of supporting the package of the car. It's still early to tell the conclusion with our PU performance, but generally we are happy with the current situation.

**The challenge this year will be different in that you can't bring updates. So will much of the work be about optimising what you have?**

Yes, a different situation compared to previous years. Our PU concept was kept since 2016. We developed, but on the other hand we could see the limitation of the performance with the previous configuration, so we decided to move forward with a new design. When you apply new design, always we need to chase against the issues or some difficulty over how to use the PU – in terms of power, also in terms of energy management.

**How intense was the winter development programme? You had the added challenge of the rules for this year (a single homologated engine design) requiring a front-loading of the development, plus Honda's impending exit and transition to Red Bull Powertrains.**

Yes, so considering the situation in the world, especially COVID, also Formula 1's situation, we postponed introducing a new PU from 2021 to 2022. So, it's kind of related to the [frozen] chassis regulation as well. As you know, we announced 2021 is Honda's last year for F1. We brought that [engine design] schedule back to the

original. So it was a very short time to complete our development. But our Honda Racing team members in Japan, Sakura, and Milton Keynes, not only the Honda side, but also the chassis side, Red Bull and AlphaTauri, focused very hard during the winter season to achieve our desire.

**You mentioned how some of the PU architecture has been modified to allow Red Bull to unlock some performance aerodynamically. How has that relationship evolved?**

For both teams, from 2018 with Toro Rosso and then from 2019 with Red Bull, we had a previous architecture of the PU. We worked with the teams on how to implement that PU into their chassis. For this year's PU, we could work together: what is the best performance at that track? Not only for you, not only chassis. So, we discussed a lot, long time. I think the new PU works more than before, for the total chassis performance.

**What's it been like working with Red Bull?**

I'm having a very good experience with Red Bull, they are very mature – and they never give up. So, every single area to improve their performance they don't leave, so it means they push very hard to achieve every single improvement. They share their ideas and sometimes they push us – but they don't tell us 'do it'. We always discuss,

**“ONCE YOU PARTICIPATE IN F1, ESPECIALLY HONDA, OUR TARGET, OUR GOAL, IS ALWAYS TO WIN THE CHAMPIONSHIP”**

between chassis side and PU side, what is the best compromise? Then we achieve the best compromise package. So, they listen to us, we listen to them. We are very comfortable.

**It's not always easy to find compromise – did you have to work at the relationship?**

From my experience with Red Bull they always listen to us and then discuss. Maybe they have a different style in the past. If you have open mind, [you can] work together, closely, successful. But if you open your mind but one side don't open their mind, it [will] never happen.

**If everything goes to plan and you win the world championship, will that feel like mission accomplished for Honda or will you feel sadness that it's coming good as you're about to leave?**

[Laughs]. We keep pushing to achieve our desire. Once you participate in F1, especially Honda, our target, our goal, is always to win the championship. At the moment, we just focus for the race winning and then championship. I'm happy people say our cars have potential to compete against the top runners. It's good. So, no mistakes, everything perfectly. And then after that, if we achieve something, I feel something!

**In terms of the transition out, how are you working with Red Bull in terms of making that transition as smooth as possible?**

We are discussing details, but our task is to transfer [the] PU to Red Bull Powertrains as smooth as possible for 2022. Actually, Red Bull Powertrains now uses the asset, but from Honda, from the Japan side, at the moment, no decision. Also, no idea on personnel transfer to Red Bull Powertrains. It's too early so we can't clarify, especially the people working in Sakura.

# LANDING ON YOUR FEET



Pierre Gasly has driven superbly since demotion from Red Bull in 2019, but the team formerly known as Toro Rosso has come on strong too – building a car that can often challenge Ferrari and McLaren. Here Gasly reveals to *GP Racing* how AlphaTauri has given him the tools needed to rebuild his reputation



## “ Obviously, the entire team is disappointed... ”

The sentiment AlphaTauri technical director Jody Egginton expressed in the aftermath of Pierre Gasly's seventh place in the Emilia Romagna Grand Prix rather neatly sums up just how far the former Minardi squad has progressed in recent seasons.

Gasly's form is perhaps the best place to start when considering this team's recent return to prominence. After all, he matched Sebastian Vettel's 2008 triumph for Toro Rosso by taking his own maiden F1 victory at Monza last year, the shock result of that campaign. This win came just over a year after Gasly's ignominious demotion to Red Bull's junior team – which is actually not what it's supposed to be called these days...

Red Bull's "sister" team – a description Christian Horner used following Gasly's Monza win – is now firmly in the fight at the front of the midfield battle. On average across 2020, AlphaTauri had F1's seventh fastest car, but it was barely behind the fifth fastest package: McLaren's. After the early races in 2021, AlphaTauri was ranked fourth fastest. While Gasly points *GP Racing* towards his team boss when we ask what's behind that breakthrough progress, he can't help but offer his own theory.

"At the end, money in Formula 1 is performance," says Gasly. "Not always, but it just clearly means you have more and bigger opportunities to find performance. In recent years, resources have increased; the knowledge [too]. The people – the way they are recruiting [with the senior team at] Red Bull has helped as well. Honda, I think when you compare to two, three years ago, the performance related to the others wasn't the same as it is today. Also a bit of stability inside the team [has helped]."

"It seems like many areas have improved and got us closer to the top teams, which we managed to show with the performance [on-track]."

AlphaTauri is clearly benefitting from the right investment and resource allocation from Red Bull – and Dietrich Mateschitz's two F1 entitles are working the system well too. Both regularly highlight 'synergy' at play. It's horrible corporate speak, but it does represent what they're doing. Since 2019, AlphaTauri (then Toro Rosso) has been taking as many listed parts supplied by Red Bull as the rules allow – including gearboxes, hydraulics and suspension elements.

"Between 2008 and 2021 we had competitive cars," says AlphaTauri team boss Franz Tost. "During these years, everything has been developed from the design office, production. The vehicle performance group improved a lot, the engineering at the race track has become much better and the engineers are much more experienced now – especially the aerodynamic department. I think we made a big step forward. The complete team developed in the last years and this is the result."

But, right now, the record books disguise AlphaTauri's rate of progress. The team finished only seventh in 2020, down from sixth in 2019 – which itself only equalled Toro Rosso's previous best campaign when Vettel won that race back in 2008. This small step backwards in terms of constructors' championship placings can be explained by lost points to reliability and poor form in the wet last year – but Gasly feels clear improvements when behind the wheel.

"There was maybe a bit more focus in the past on the race," he says when comparing the handling of the machines the team is now producing compared with those in which he made his F1 bow nearly four years ago. "Like, [set-up] direction was putting a bit more understeer in the car and accepting that the car will turn on just the characteristic of the car. [That would] mean that you needed to deal with some understeer ►

“

**We managed to find quite a good compromise, which allows us to push the entry quite hard and still get the front axle to stick at the apex**

”

mid-corner and struggle to retain the car in the low speeds. Traction would be quite difficult as well, especially in low-speed [corners].

“That’s where the team [has now] managed to get a platform that works better from high-speed to low-speeds – something which is more consistent, with a bit better potential. Obviously, there are many things that come into play. The team has improved in all areas. But in terms of car platform, I think it’s more [that it’s now] working in all areas, where before we could [only] make maybe one area great: high-speed or medium-speed, but then another would suffer a lot more.”

Gasly’s strong 2020 form continued his impressive personal recovery in the second half of 2019 after being extricated from Max Verstappen’s shadow at Red Bull. AlphaTauri’s way of engineering its package to give its drivers a wider operating range played a big part in this. One particularly intriguing aspect of the current ATO2 is that it does not feature the complete rear end package Red Bull used in 2020 – despite AlphaTauri being permitted to use it without spending one of its precious 2021 development tokens, thanks to a rules loophole regarding upgrading listed parts from 2019 to those produced last year. It’s worth remembering just how skittish the rear end of RB16 was last year...

But for Gasly, there’s one particular part of AlphaTauri’s current package, which featured in 2020 too, that’s giving him a boost. “Having the front axle sticking at the apex, mid-corner,” he reveals. “I like to carry quite a lot of minimum speed. All sorts of corners, I always try to let the car roll and carry a lot of speed by and in the rotation, to allow [me] to have a good and straight exit still.

“With these [current F1] cars, often you get understeer mid-corner, or by pushing the entry quite hard and the front gives up at the apex. We managed to find quite a good compromise, which allows us to push the entry quite hard and

still get the front axle to stick at the apex.”

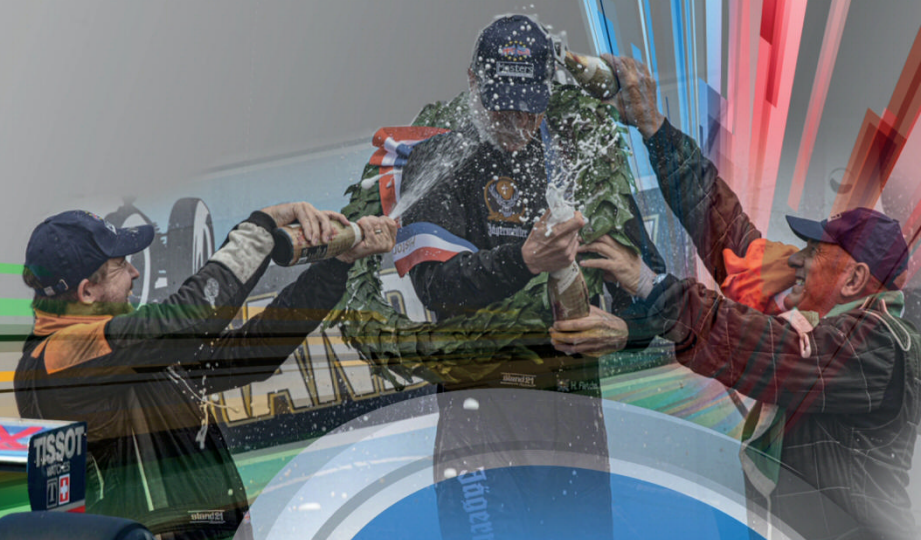
There’s another part of the explanation behind Gasly/AlphaTauri’s improved form that shouldn’t be underplayed: engine performance. Honda is about to leave F1 once again – but will do so on positive terms after making giant strides since splitting with McLaren. This is Honda’s fourth ►



Gasly is happier with set-up of his car (above) and he and AlphaTauri team principal Franz Tost (below) feel the team has improved in all areas



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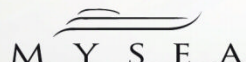


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season working with Toro Rosso/AlphaTauri, and as the Japanese manufacturer heads towards the exit it has produced a lighter, leaner, lower engine (see sidebar) which has given AlphaTauri and Red Bull a serious performance boost.

“It’s just huge,” says Gasly when asked how important Honda’s work has been to AlphaTauri’s recent rise. “When they commit to


something, Japanese people and especially Honda – I’ve been working with them for quite a few years – they really commit and then they work till they get to the point that they’ve always wanted. And I think now we’re starting to see that, which is [why it’s an] even bigger shame to see them leaving at the end of the year because I think there would be really good things to do in the future [together].”

AlphaTauri will still benefit from Honda’s efforts even after the company leaves F1, as Red Bull will take over production from its new Powertrains division in 2022. But there’s further reasons for the team to feel confident about the coming years. The cost cap will help level things out with the bigger squads to a certain extent, and there’s F1’s (modest) new performance balancing rules regarding aerodynamic development. But, in any case, AlphaTauri is still set to gain as the extra capacity the new development rules have created means it can use Red Bull’s 60% scale model windtunnel in Bedford. Until this year, AlphaTauri was the last team running a 50% model at its Bicester facility – so the change is set to have an impact

on its 2022 design efforts.

But results are what really matters in F1 – so the cliché goes. And that’s why Egginton’s words ring so true for AlphaTauri’s current perspective. It’s had a taste of success again and is hungry for more, which is delighting the driver that brought the team back to the top step of the podium.

“Since 2017, when I came in the team, it’s the best dynamic that I’ve seen,” concludes Gasly. “I just feel like there is a great atmosphere, there is a great energy. There’s clearly a great

mentality – people want more. [It’s], ‘we should not just be happy with what we’ve got, but we should work to deliver even better results’. It also really makes me happy to see that people have that motivation to deliver more and try to achieve more. I’m really happy to also be part of this project. It’s a great time at the moment in AlphaTauri.” 



“

**Since 2017, when I came in the team, it’s the best dynamic that I’ve seen. I just feel like there is a great atmosphere, there is a great energy. There’s clearly a great mentality – people want more**

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## HONDA’S 2021 ENGINE SECRETS

Honda’s head of power unit development, Yasuaki Asaki, gave an unusually detailed insight into the development of its 2021 engine after Max Verstappen’s victory at Imola, describing it as the single biggest shift in architecture since moving to a split turbine/compressor layout during the McLaren years.

“We’ve changed the camshaft layout to be much more compact, and also brought its position lower down so it’s closer to the ground,” Asaki explained in a Honda Racing F1 blog post. “We’ve also had to change the valve angle. The main point of what we’ve changed was to improve combustion efficiency. In order to do so we had to change the valve angle, and in order to do that we had to change the camshaft.

“We’ve also had to make the head cover lower and more compact, which means the way that air flows over it has become a lot better. And we’ve lowered the centre of gravity of the ICE [internal combustion engine]. Another thing we changed is the bore pitch, by reducing the distance between one bore and the next, we’ve made the engine itself shorter, smaller.

“In the old engine straddling the transmission we also had a bank offset whereby the left bank was slightly offset from the right bank. So, what we’ve done is reverse this offset on the new engine so that the right bank is forward, and the left bank is back.

“Another point we’ve had to think about is the fact that combustion efficiency has got better. And the camshaft output has got better. Due to the rules of physics the amount of energy that can be stored has changed, and it meant that the amount of exhaust energy has decreased.

“So, compared to the [MGU-H] recovery that we were getting last year, what we’re having to do is increase the amount of crankshaft output, and at the same time ensure that there’s a good level of exhaust output, exhaust temperature as well.”

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# OUT OF THE

**Guenther Steiner** puts his hands behind his head, leans back in his chair and looks to the side. The Haas boss needs a few seconds to think, as he's tasked by *GP Racing* to describe his new German driver using three adjectives. "Focused," he says, returning to his initial sitting position, before adding: "Hard worker. It's not an adjective, but I can use that, huh?"

WORDS OLEG KARPOV PICTURES  **motorsport**  
IMAGES

**Then comes another pause**, an even longer one, as that last one has to be spot-on. Steiner looks to the side again, then turns back and says confidently: "Smart."

Yep, Guenther, that fits. Here's a fun fact – the evening after his first Formula 1 qualifying in Bahrain, between the media interviews and engineering debriefings, Mick Schumacher occupied himself with an activity many smart people enjoy: playing chess.

It was no one-off. Chess has been a part of Schumacher's race weekend routine since his early days in junior categories. Mick usually plays against a fellow named Kai Schnapka.

The physio from Leipzig worked with Michael Schumacher during his final years in F1, and for the last few seasons has accompanied Schumacher's son at races.

"I'm probably not that good, but I kind of beat him," the junior Schumi laughs as he tells *GP Racing* of his chess skills. "Let's say it like this. It is just to keep myself busy and entertained. Other than chess we have also backgammon, we have card games. I feel like these games [are] kind of just bringing the focus back, as you always have to be switched on with your mind. In a weekend, I always want to be mentally ready for every challenge that comes ►



# SHADOW





my way, not only driving, but also if the team needs me. I need to be right away ready to answer difficult questions. You never want to miss a situation because you're not ready for it."

Mick readily agrees he's probably a better racing driver than chess player, but strategic thinking is definitely not a weakness of his. His junior single-seater career has progressed like a perfectly executed chess game.

A good player would never go for an early attack without making sure he has the pieces in place to support it. When Schumacher won the European Formula 3 title in 2018, he'd earned enough superlicense points to go straight into F1 – and his surname could've opened doors right then and there. But in spite of the recent examples of Max Verstappen and Lance Stroll,

Mick favoured a move to F2 first. Presumably, that's because simply making it to F1 wasn't the junior Schumacher's goal. He wanted to be as ready as possible when he got here.

"Obviously, F1 was my dream," he recalls. "But when I was in F3, F1 felt so far away in a way. I think I wasn't probably as ready as I am now. I'm happy I made the step into F2, because it gave me the time to learn different ways of working, not only on the car, but also in the team.

"Being able to win the championship last year proved to me that I'm able to gather all the information I need to always be one of the top drivers. If I carry that through my career in F1, I'll be able to improve even more each year."

Modern F1's testing restrictions definitely factor against newcomers, but in Mick's case he

was as ready to move up as he could've been. Under his belt were not only two years in F2 and a title, but many hours of work in Ferrari's simulator. Schumacher also got the chance to drive a real Ferrari F1 car, and an Alfa Romeo, as well as last year's Haas.

Over the last decade, there has hardly been a driver better prepared for their F1 debut than Schumacher Jr – and yet Mick's arrival hasn't gone smoothly. In Bahrain he spun right after the Safety Car restart; at Imola he overdid it with tyre warm-up during another Safety Car period and smacked his Haas against the pitwall.

"They all [are] pretty ready after F3 and F2," says Steiner when asked of his driver's early mistakes. "But then it's still a big step into F1. The only way to learn about F1 is doing it. You cannot

**"THEY ALL [ARE] PRETTY READY AFTER F3 AND F2, BUT THEN IT'S STILL A BIG STEP INTO F1. THE ONLY WAY TO LEARN ABOUT F1 IS DOING IT. YOU CANNOT READ IT IN A BOOK."** GUENTHER STEINER



He may be the son of a seven-times world champion but Mick is being treated like any other driver by Haas

read it in a book. You can do simulator work, you can drive two-year-old cars, but still going to a race weekend, coming from F2, getting exposure, getting the pressure... it's the only way.

"It's not like we could send him to a year of school to learn F1. It would be still jumping in cold water when you do your first race. It's just so much more [happening]. All of a sudden there are 50 people [around you], and these people are not there to sit and watch TV. These engineers just bombard you with instructions. When it hits you the first time, it must be quite amazing. And it only gets natural by doing it."

But being a rookie in F1 is one thing. Being a rookie with such a surname is another. Where others would've had the chance to learn at their own pace, Mick – thanks to carrying the Schumacher name – is always under the spotlight. Especially in Germany.

You'll never hear revelations from Mick on how hard it may be to cope with the added pressure of his surname. "I'm very happy to carry that surname and I'm very happy to carry that name back into Formula 1," he'll say when answering such questions. "I'm very proud of it. It's like a boost to me and it gives me motivation every day to work as much as I can and as hard as I can."

But is it really that simple? ▶

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Schumacher's first two F1 races have proved tricky but he has brought his Haas home both times, finishing 16th in Bahrain and Imola

"I think with that one, he's actually dealing pretty well," says Steiner. "But it's still a pressure. It still doesn't come for free. It's not something you just say 'yeah, I don't really care' about. We also must not forget he's not 50 years old. He's 22.

"Now, going to F1, everybody is expecting that he does what his father did, you know? 'Oh, Michael was seven times world champion, so now Mick picks up, and he's going to be world champion'. Also, for Michael, it took a few years. It didn't come from today to tomorrow."

In the junior series, Mick was shielded from excessive media attention by manager Sabine Kehm. He almost never gave any exclusive interviews. But, like his junior career, that period has too ended. Haas, Steiner insists, is treating Mick like any other driver, even if in his case the interest from the press is many times higher than it might be for other rookies.

"If you want to do this business, that's part of it," Steiner explains. "You cannot be always protected. Because at some stage it will come to you anyway. I think there [in junior series] it was more important, because I think it was a lot more about his last name than the actual racing. In Formula 1 you probably can control it, but you cannot avoid it anymore.

"He's there now. He's one of 20. So it's part of the job now, to be Mick Schumacher. Whatever name you've got, you are a Formula 1 driver now. But I think that is happening naturally now, that he's just a part of an F1 team, and the F1 team decides what you need to do. Because there are sponsors, which we have obligations to."

On the other hand, being a Schumacher in motorsport is a clear benefit. Mick has always been surrounded by people like Schnapka and Kehm, who know this world inside out, having



Steiner (left) knows that, despite the limitations of the 2021 Haas, Schumacher Jr will still be able to learn a lot about F1 in his rookie season

worked with one of the best drivers in history. Along with Peter Kaiser, a long-time friend and partner of Michael's, they have been guiding Mick from his first steps in the lower categories. And he can still count on them now.

"That always gives me a lot of trust and hold," Mick says of this support. "And also the ability to kind of sometimes escape the stressful weekend, to just relax. To play chess, for example, or just not always 100% think about what is going on out

there and how to try and proceed with the next step and everything, but also to reset the mind and be able to think even more clearly after that."

There will be more people from his father's past willing to help Mick within Haas too. Technicians Maurizio Barbieri and Leonardo Di Biase, and technical director Simone Resta, also worked with Mick's father during his best years in F1. And like his father, Schumacher Jr is someone who's capable of getting more people on his side, according to Steiner.

"He really tries to treat people correctly, and appreciates what they do," the Haas boss says. "Because, again, I say he's smart... If these guys bond with him, they will work hard for him. If he doesn't try to bond with them, for them it will be just another driver.

"So he knows exactly what he's doing. But I think it is genuine, he's not doing it to take an advantage of it. He really respects people and what they do for him, and he understands as well that they work hard. And if you work as a team,

**"THE CAR IS NOT FAST, SO LET'S MAKE THE MOST OUT OF IT AND RUN AS MUCH AS WE CAN, LEARN AS MUCH AS WE CAN, SO WHEN WE GET A BETTER CAR, WE ARE READY" GUENTHER STEINER**

it's much easier to get the last drop out of them than when you don't care about them. He cares."

Mick's first F1 season won't be easy. He doesn't have a car as capable as Jordan's 191 to put him immediately inside the top 10, nor is Flavio Briatore ready and waiting to offer Schumacher a podium-contending car. The 2021 Haas is the worst car in F1 right now, so Mick's first year definitely won't be as exceptional as his father's.

But if there's any positive to that, it's that Mick can spend the year doing what he does so well – developing his skills.

"For sure, he would have liked to have a better car," admits Steiner. "But if you analyse it from a little bit of distance, it doesn't hurt him. He can still learn to drive an F1 car with all the complexity, all the difficulties... and there are even more difficulties with a bad car than with a good car, to be honest. And he can learn all that without additional pressure, because I think we take a lot of it away from him saying 'hey, we know it's not him, it's the car which is not competitive'.

"We have to get the good out of the bad – the car is not fast, so let's make the most out of it and run as much as we can, learn as much as we can, so when we get a better car, we are ready."

The good thing is, people say he's smart. So he'll probably figure out a way.

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# THE THE HISTORY OF LOTUS END OF PART 2: 1961-68 INNOCENCE

The Lotus marque's values crystallised in the 1960s as founder Colin Chapman met his perfect foil: the peerless Jim Clark. But Chapman's technological *tours de force* were fragile as well as fast...

WORDS DAMIEN SMITH

PICTURES



**motorsport**  
IMAGES







**Fifty-three years he's been gone.** Yet Jim Clark in a British Racing Green Lotus with a vivid yellow stripe still represents the very best of Formula 1. Beware the instinct to beatify our racing heroes; Clark was no saint and he made mistakes (although not many). But beside Tazio Nuvolari, Juan Manuel Fangio and Stirling Moss, this mild-mannered Scottish sheep farmer remains as close to the embodiment of a perfect racing driver as we're ever likely to see. Yes, the racing record was near-spotless, but more than that, no one ever had a bad word to say about Jimmy – the quiet maestro who defines a golden decade.

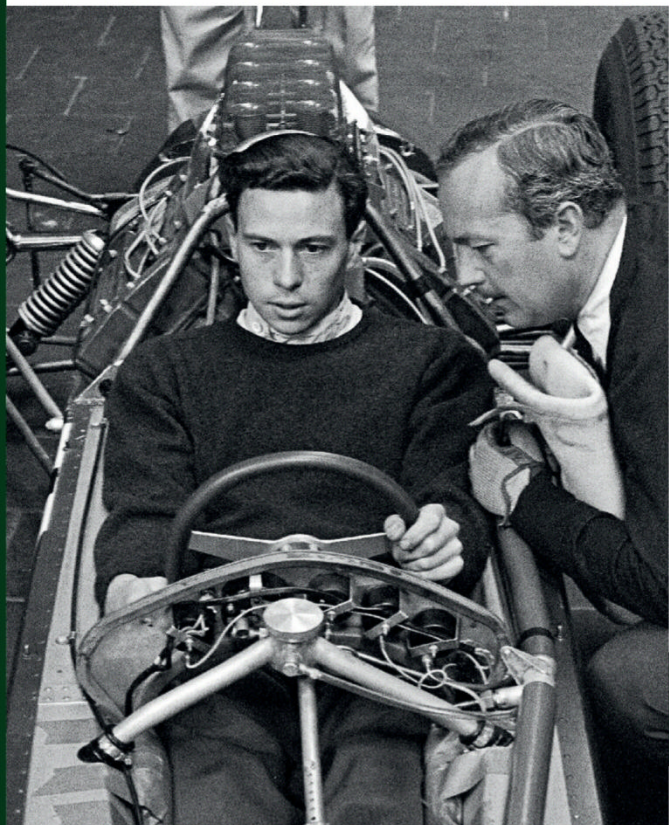
But like his sixties contemporaries John Lennon and Paul McCartney, for us to see the best of him Clark needed a partner, a foil, a perfectly in tune accomplice. Colin Chapman intuitively understood the man who would become his muse and, once that alliance was formed, it would colour the rest of his life.

Naturally, Chapman was quick to spot the potential in the guy with the bitten finger nails, but still it took time for the partnership to earn its wings. In 1961, the first year of a new 1.5-litre engine formula hated by the emerging British contingent, Stirling Moss and his patron Rob Walker led the charge ahead of Team Lotus against Ferrari's striking 'sharknose' 156, Maranello having stolen a march with its powerful V6 developed in Formula 2.

The British revolution was checked, briefly, although Moss worked unforgettable wonders despite a sponsor clash keeping him at arm's length from Chapman's most cutting-edge equipment. Still, the boxy type 18 served Stirling's needs perfectly around Monaco's streets where he claimed arguably his greatest grand prix victory, although Walker rated the one at the Nürburgring above it, in a hybrid 18/21 sculpted to smoother, elliptic lines.

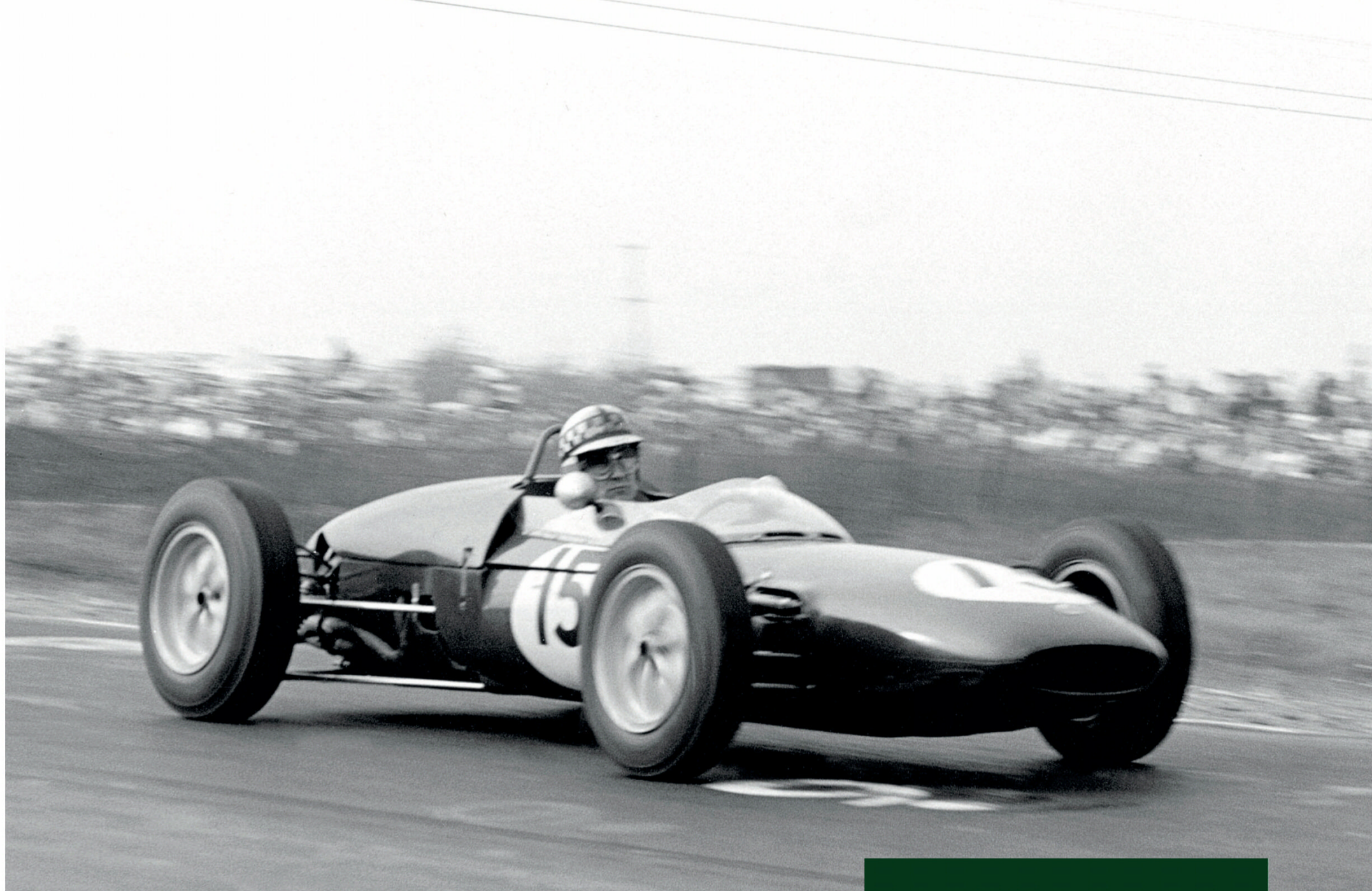
Over at Team Lotus, Clark wasn't yet the finished article. He was sensational in practice at Monaco until he crashed heavily at Ste Dévôte, then finished third in the Dutch and French GPs and won at Pau for a first (non-championship) F1 win. But his unwitting involvement in the fatal crash at Monza that claimed Wolfgang von Trips and 14 spectators haunted him for the rest of his life. At Spa a year earlier, he'd almost run over the body of poor Chris Bristow. No one could have blamed Clark had he turned on his heel and returned to his sheep farm. But there was steel inside that buttoned cardigan exterior.

That season, team-mate Innes Ireland shone at



Clark, Chapman and Lotus. Three words that just went together. Clark sits in the new Lotus 25, listening to Chapman, at the 1962 Dutch GP (above)





Innes Ireland claimed the team's first world championship F1 win at Watkins Glen in 1961



(pointless) Solitude where he passed Jo Bonnier's Porsche on the grass at the last corner. As Ireland headed off chasing Bonnier and Dan Gurney for that final lap, Chapman had turned to his team and said: "Either old Innes is going to win this race or that's the last we'll ever see of him..." This was a brave racing driver, underrated by too many – Chapman included. It was Innes who finally broke Team Lotus's world championship grand prix duck at season-ending Watkins Glen – and he was rewarded just days later with the sack. Colin frowned at Ireland's unruly and gloriously defiant lack of dedication, already out of its time. Brutal, certainly, but unarguable hindsight outweighs sentiment as Chapman put his faith in Clark. Ireland's frontline career never recovered.

The landmark Lotus 25 upped the ante for everyone in 1962. In the type 24, a traditional spaceframe evolution of the 21, Chapman had already shuffled things along. But it turned out the 24 was just for customers... for Team Lotus, he had something else up his sleeve, evolving in a corner of the Cheshunt factory under the care of mechanics Dick Scammell and Ted Woodley, with Mike Costin on rivet duty.

Monocoques – lashed from the Greek for 'single' and the Latin 'coccum' for 'shell' – had been used in automotive construction almost as early as they were for aeroplanes. The mid-

section of Jaguar's D-type was the most notable monocoque in a racing car, until a lightbulb moment when Chapman considered the immense rigidity for little weight in the prototype Elan two-seater. Could such construction be used in a single-seater, he mused, as he sketched on a restaurant napkin?

The stressed-skin fuselage construction mated to Coventry Climax's V8 was beautifully conceived and presented. When Team Lotus ►

**NO ONE COULD HAVE  
BLAMED CLARK HAD  
HE RETURNED TO HIS  
SHEEP FARM. BUT  
THERE WAS STEEL  
INSIDE THAT BUTTONED  
CARDIGAN EXTERIOR**



rolled the 25 into the Dutch GP paddock, Ireland and the UDT-Laystall customer team he now drove for immediately asked when theirs would be ready. Ah, this was the 'experimental 1963 car', replied Chapman... Innes's mood with his former boss took another downturn.

Clark led first time out at Zandvoort, then came from P12 at Spa to claim his first points-scoring grand prix victory – by 44 seconds. He'd blitz the British GP at Aintree too, but inadvertently flicked his fuel pump off at the start in Germany and was forced to dig deeper than usual to finish fourth. That didn't help his world championship cause as he engaged in a season-long battle for supremacy with Lotus old boy Graham Hill, now thriving at BRM. After Clark's win at Watkins Glen, he trailed Hill with just South Africa to go. Jimmy stormed away in East London – only for ominous smoke to signal Lotus was still falling short. A bolt had dropped out of the engine crankcase and his oil leaked away, along with his title hopes. In the pitlane a bearded Stirling Moss looked on, still in recovery from the shunt, in a Lotus 24, that had ended his career at the Goodwood Easter Monday meet. Here was the major 'what if' loss of the 1960s: Moss was still at the top of his game just as Clark was coming to the boil. One of F1's greatest rivalries was over before it had truly begun.

Small margins carry weight in F1, never more so than in the case of Clark and Lotus. In 1962 and 1964, Jimmy did all that was required to win tense title finales, only for his machinery to let him down. Without that oil leak at East London or a split oil line on the last lap in Mexico City two

## CLARK EMBARKED ON SURELY THE GREATEST SINGLE CAMPAIGN BY ANY RACING DRIVER

years later, Clark would have been a four-time consecutive world champion by the middle of the decade, instead of 'only' twice a champ. He drove in a wonderful era, against Hill, John Surtees, Dan Gurney, Jack Brabham and Jackie Stewart – but with the greatest respect to them all, this was Jimmy's time. When Lotus and Climax V8 held together, invariably he won. It's telling Clark only once came second in a points-paying GP, to Surtees after a titanic duel at the Nürburgring in 1963 – and that was with a sick engine. Did he have great racecraft? Perhaps not. He could be fallible under pressure (see the 1965 Race of Champions at Brands Hatch, when he smacked the bank as Gurney turned up the heat). But in a Lotus he didn't need racecraft most of the time.

As for the type 25, it claimed 14 world championship grand prix wins and 11 non-points victories, while the evolutionary 33 kept the ball rolling. Clark owned the 1.5-litre era. First consider 1963: seven grand prix victories out of 10, including three 'grand slams' (pole, victory, fastest lap, led every lap) and a masterclass at Spa where he only started from the third row, led by Eau Rouge, held a 30-second cushion by

half-distance and negotiated a thunderstorm and downpour to lap everyone bar Bruce McLaren, who started his last lap as Clark took the chequer. Winning margin: just shy of five minutes...

Reliability and a lack thereof, plus a fine second half of the season from Surtees, cost Clark in 1964 – although he did three-wheel his way to the British Saloon Car Championship in a Lotus Cortina (imagine Lewis Hamilton squeezing



Monza 1963: Clark and Chapman celebrate the race win, and Clark and the team's first world titles



Clark was heading for an unlikely second title in Mexico in 1964, until an oil line failed with a lap to go



In 1965 Clark became the first non-American to win the Indy 500 since 1920, in a Team Lotus 38



One of Clark's best drives came at Spa in 1963 when he lapped everyone bar Bruce McLaren



Clark's stunning 1965 culminated in a second championship, secured in race seven at the Nürburgring

that in today). Then in 1965 Clark embarked on surely the greatest single campaign by any racing driver: among F2 wins and a Tasman crown Down Under, Clark spiked six consecutive grand prix victories, not counting the Monaco GP which he missed – because he was busy winning the Indianapolis 500.

The dominant victory at The Brickyard in Len Terry's svelte Lotus 38 marked the culmination of a project to conquer the lucrative race that had started back in 1962. A year earlier, Jack Brabham and Cooper made what amounted to a reconnaissance mission that opened a chink for a similar British-led rear-engined revolution to that which had swept through F1. But it was Gurney's response to the Lotus 25 when it broke cover at Zandvoort that really sowed the seed for Chapman. "My God!" said Dan. "If someone took a car like this to Indianapolis they could win with it!" Gurney paid for Chapman's airfare to visit the 500 and his eyes were opened to the possibilities, largely because the big-beast front-engined ►



Clark on Peter Arundell's car in 1966. Arundell had returned to the team after four GPs in 1964



Trevor Taylor, seen here with Chapman, was Clark's team-mate for 1962 and 1963

roadsters reminded him of grand prix racing – in the 1930s... By happy coincidence, Ford was also casting its eye at Indy, an alliance was formed and Indycar racing changed forever.

Not that the locals were too happy. In 1963, a 'rookie' Clark (who took some time to warm to Indy's charm) should have won on his Indy debut. Parnelli Jones, running ahead of him, was dropping oil and by USAC rules should have been called in. Officials turned a blind eye. But by 1965 there was no stopping the tidal wave that had crashed in from Europe. It's an achievement that's equal to anything Lotus and Chapman managed in F1.

Back home – from 1966, in Hethel, Norfolk – Lotus was thriving, Chapman an unstoppable force. But pity anyone who found themselves driving beside Clark in F1. Jimmy's team-mates during his zenith seemed cursed, as he (unintentionally) drew the lion's share of Chapman's attention. Their fates offer a stark reminder of just how fierce motor racing was back then. Trevor Taylor, Peter Arundell and Mike Spence all shone at Team Lotus – but it didn't end well for any of them.

50 yards down the track. It's a wonder Taylor survived until he was released for 1964.

Arundell replaced Taylor on the back of 18 wins from 25 Formula Junior starts and showed well in non-championship races – until his spinning car was hit by Richie Ginther in an F2 race at Reims. The Lotus smashed into a bank, Arundell was hurled out and suffered a broken arm and collarbone, plus severe concussion. Recovery was slow, but he returned to racing on New Year's Day 1966 when he finished third at the non-championship South African GP in a Lotus 33. But the man in the bright red helmet had lost his glimmer.

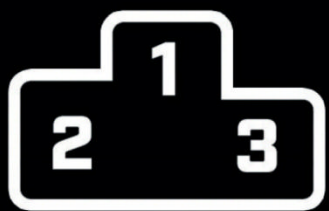
Fair-haired Spence with the flaming orange skid-lid was next up and proved the exception to the rule that only Clark could win in Team Lotus F1 cars, picking up the 1965 Race of Champions in the wake of Jimmy's surprising shunt. Arundell's return in 1966 shunted Spence to Reg Parnell's team, then on to BRM – only for him to be recalled to Lotus in the wake of Clark's death to race Clark's car at Indianapolis in 1968. A month to the day after Jimmy died at Hockenheim, Spence ran a team-mate's car in a shakedown, hit the wall and the right-front wheel struck his head. This was motor racing in the 1960s. ►



Mike Spence replaced Arundell and did manage to win the 1965 Race of Champions at Brands Hatch

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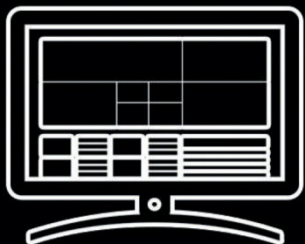
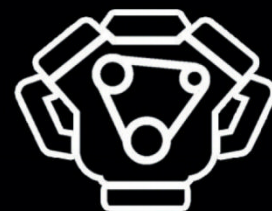


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Clark after he had won the first GP of 1968 in South Africa. By the next race in Spain he was gone...



'Return to power' was the clarion call in 1966, as F1 engines doubled in size to three litres – and Clark's remarkable stranglehold on F1 was broken. At first glance, Lotus had left itself high and dry without a competitive engine, much like 1961; Chapman fell back on 2-litre Coventry Climax units until he acquired a supply of complex BRM H16s. The engine was anathema to Chapman's "simplify, then add lightness" mantra, but the type 43 – in which Clark claimed a single win, at Watkins Glen – served its stop-gap purpose. Again, the old man had something special up his sleeve.

For the second time in the decade, exactly five years on from the Lotus 25, Team Lotus rolled out another game-changer at Zandvoort, in June 1967. The Lotus 49 remains a classic, but it was the V8 bolted to it – as a fully stressed member – that defined this epoch moment. Ford's Walter Hayes said it was the best hundred grand the Blue Oval ever spent when it took the Chapman bait once more. Cosworth, formed in the old Hornsey days to prep Lotuses and service Coventry Climax engines, had come a long way under co-founder Keith Duckworth. Now for the first time he designed an engine from scratch, with the help of Ford's gelt. And in the DFV – double four-valve – you could say he nailed it.

Not that the 90-degree V8 emerged in

## THE LOTUS 49 REMAINS A CLASSIC, BUT IT WAS THE V8 BOLTED TO IT – AS A FULLY STRESSED MEMBER – THAT DEFINED THIS EPOCH MOMENT

perfected form. Yes, Graham Hill – a surprise Lotus returnee for 1967 – led the Dutch GP, and yes, Clark scored a landmark win when his teammate's DFV broke a camshaft, but the Lotus-Ford 49 was a flawed combination in that first season. Initially, the engine's power delivery was switch-like and reliability woeful as Denny Hulme scored his way to Brabham's second consecutive world championship. But Clark did win four times – twice more than the champion – including at Silverstone in what turned out to be his last visit to the UK. The farmer was now living the life of a tax exile in Paris, embracing a taste for sophistication during the 'summer of love'. The world was changing, and even Jimmy Clark was going with the flow. But back at the tracks, there was nothing trippy about his performance when F1 hit Monza.

On lap 13, a deflating tyre cost Clark a lap. But on lap 61 his Lotus took back the lead, Jimmy having made up 100 seconds in 46 laps –

only for the fuel pump to break on the last one. He was classified third. Never mind, 1968 would be his year once more – surely. No one could ever have considered... No, it couldn't happen. Not to Jimmy.

At the turn of the year he won in South Africa, his 25th grand prix victory, to surpass Fangio's record, in a Lotus painted green with a yellow stripe. By the Spanish GP in May the 49 was carrying the lurid red, white and gold-striped livery of Player's tobacco brand Gold Leaf. Chapman had ushered in another revolution. The tragedy was Jimmy Clark had already been lost, in a piffling F2 race at misty, damp, flat-out, tree-lined Hockenheim. A blown tyre? A misfiring engine? Fifty-three years later it doesn't matter how or why. The greatest driver of his generation was gone, his friends and colleagues were disbelieving, Lotus was devastated – and the age of innocence was over. Nothing for Chapman could ever be the same again.

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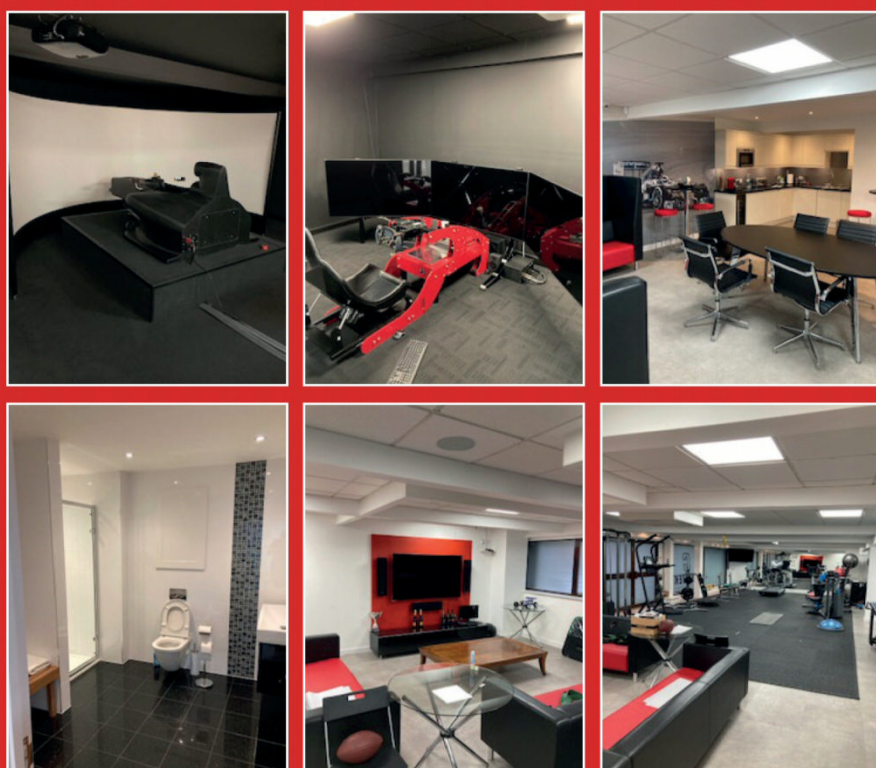
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# NIGEL ROEBUCK'S F O R M U L A O N E HEROES

## RICCARDO PATRESE

PICTURES  **motorsport  
IMAGES**

A KARTING  
WORLD  
CHAMPION  
IN 1974...

and winner of the 1976 European F3 Championship, Riccardo Patrese arrived in Formula 1 the next year with Shadow. He didn't set the world alight, but showed considerable promise, and the following year – now with Arrows – really made his mark. Had his engine not blown in the closing laps, he would have won the South African GP. Invariably competitive, his best result was second to Niki Lauda in Sweden – but that day also brought Patrese a lot of bad press.

Patrese, rivals suggested, had brought F3 driving manners into F1, and they didn't like it. At Anderstorp, the phlegmatic Ronnie Peterson was livid at the way Riccardo had kept him from passing.

Back then there was no permitted 'one move' in F1, and blocking – before Ayrton Senna recalibrated the ethics of motor racing – was considered cheap and underhand. "Any idiot can block," said Gilles Villeneuve contemptuously, and his colleagues were of the same mind. They thought Patrese something of a brat.

"I think," he told me, "that maybe I often used to behave like that in those days. Everyone thought I was arrogant, but actually I was shy. I was very young still, and didn't know the other drivers very well. And I must admit, I was *very* intense."

What seriously affected Patrese was the aftermath of the accident at Monza, which cost the life of Peterson. Even though blame lay plainly elsewhere, other drivers held him culpable for the disaster away from the start, and concluded this upstart needed to be taught a lesson. If his entry for the next race, Watkins Glen, were accepted, they said, they would not take part. Thus, they had him banned for a race.

"It was because they didn't like my attitude over the season, but by timing it when they did, it looked as if they were punishing me for the Monza accident. Psychologically, I had no problem with that, because I knew it hadn't been my fault, but it took a long time to forget how they treated me."

It had been a witch hunt, nothing less, and years later one of them told me that it was the only incident in his motorsport career

Patrese got pleasure from racing but also loved his life with Suzy in Padua, the place he calls home



After a troubled start to his F1 career and some fallow periods, it was in Patrese's five seasons with Williams that he achieved most

of which he was truly ashamed.

Patrese stayed with Arrows far too long, until the end of 1981. Although Bernie Ecclestone had tried to get him to Brabham in 1979, Patrese was starry-eyed about Ferrari, and declined long contracts, so as to be free to accept The Offer, endlessly promised, never delivered. Finally, in 1982 Riccardo committed himself to

Brabham, winning his first grand prix at Monaco, and his second, at Kyalami, the following year. For 1984, though, Ecclestone unfathomably replaced Patrese with Teo Fabi, so Riccardo signed for Alfa Romeo. Two seasons in the wilderness followed.

"The cars were hopeless, and I was so angry that it started to affect my private life – I mean, I was not smiling *at all!* I remember one day saying to myself, 'Riccardo, you have to do something'. It was a turning point in my life. I changed my approach, my mentality, everything – and I still don't know how I did it."

If Ecclestone has been close to few drivers, Patrese was one of them, and back he went to Brabham for two more years. "It was lucky that Bernie and I were friends – when he gave up being a team owner in 1987,

he recommended me to Frank Williams.”

This was to be the most productive relationship of Riccardo’s career: “When I went to Williams, it was like a camera had finally come into focus.” Everyone in the team became very fond of him, not least Patrick Head.

“You’d call Riccardo up,” said Head, “ask him to test at a moment’s notice, and he’d say ‘fine, I’ll be there’. He was never a selfish man, which is rare in a racing driver, and his ego was under control – which is also rare...”

Speaking of egos, in 1991 Patrese’s team-mate Nigel Mansell said this: “I take Riccardo’s speed this year as a great compliment to me – I’m the only one who can motivate him.”

Had Patrese been inclined to return the back-handed compliment, he might have suggested that perhaps the motivation had been overdone: it was not until Silverstone that Nigel outqualified him.

Although the Williams-Renaults were not conspicuously reliable in 1991, Patrese had a fine season, with four poles and a couple of victories, in Mexico and Portugal. An abiding memory is of qualifying at Estoril.

Early in the session Patrese’s car blew up, but Mansell’s contract decreed the spare Williams was for his use alone, and it was not until the last five minutes, when Nigel clearly wouldn’t need it, that Riccardo was allowed to climb aboard.

There was no time to play with the set-up, but Patrese’s blood was up and, after a single warm-up lap, he shoved Senna, Berger and Mansell aside, and put himself on pole. “That was good, wasn’t it?” Head beamed, and Riccardo then won the race.

The following year, though, Williams went ‘active’, and although

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“WHEN I WENT TO WILLIAMS, IT WAS LIKE A CAMERA HAD FINALLY COME INTO FOCUS”

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its performance advantage was considerable, now Patrese was rarely on par with Mansell. “I admit I prefer passive cars,” he said, “because they have so much more feel. Nigel either has more bravery, or less imagination, or both...”


Patrese finished second to Mansell in the championship, and then, when it seemed Williams would run Mansell and Prost in 1993, signed for Benetton. Within days Riccardo learned that Nigel was quitting F1 – that he could have stayed after all.

“That’s life, isn’t it?” he shrugged. “Of course I was sad, but I said, ‘No, Riccardo, if you have signed something – even given your word – that’s it’.” Unfortunately, Benetton behaved less honourably when it came to the second year of his contract: after a disappointing 1993 season, Patrese accepted his F1 career was over.

There were only six victories, fewer than might have been predicted, but I reckon Riccardo got more pure pleasure from his racing life than most drivers I have known. Away from it, too, thanks to the divine Suzy and their three kids.

Patrese was never obsessed with money, which also stood him out from the crowd. “I know other drivers make much more, but I can make a good life on what I earn. Frank pays me \$800,000, which I think is correct for a driver of my record.”

Riccardo was far from a typical driver of the 1990s, preferring Beethoven to George Michael, devoting himself – as well as to golf and skiing – to unusual hobbies, like collecting rare Marklin model trains. Yes, he kept an apartment in Monaco, but home was always Padua, where he was born.

You can learn a lot about a driver from talking to his mechanics, and Patrese they adored. F1 drivers are notoriously tardy when it comes to reaching for their wallets, but at the end of a season Riccardo would always treat his entire team to a memorable dinner. A consummate Italian gentleman, and a superb racing driver. 

Estoril in 1991 was a stand out race. With only five minutes in the spare car Patrese qualified on pole and went on to win



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# FERRARI

Hampered by troubled development and Maranello politics, yet it was the last F1 Ferrari founder Enzo saw win...



# F1-87



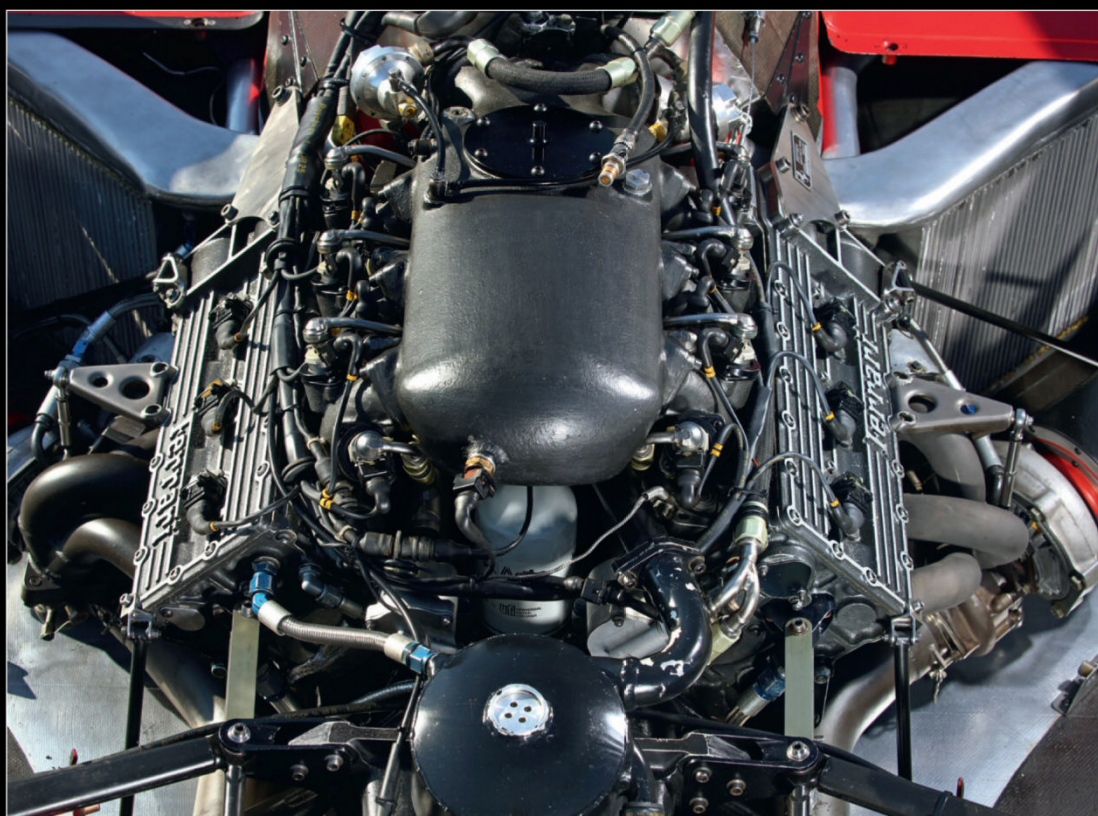
**S**ince his cars were so directly an extension of [Enzo] Ferrari's own being, to admit fault in them was to admit fault in himself. That was something he could not do. As I look back, all my years at Ferrari seemed to be a macabre dance, by everyone concerned, to avoid blame. The mechanics, the engineers – yes, even the drivers. No one wanted to be stuck with *mea culpa*."

Phil Hill's words, in the seminal text *Ferrari: The Man, The Machines*, edited by Stan Grayson, could be applied to any era within Ferrari's long and tumultuous history. But perhaps none more so than the three febrile years preceding Enzo Ferrari's death in the summer of 1988.

The 'Old Man' spent a lifetime playing both his underlings and men of higher power off against one another but, as his health faded, the political manoeuvrings within his orbit grew more brutal. The casualties included longtime engineering guru Mauro Forghieri, designer of more than one title-winning Ferrari in the 1970s and father of the venerable flat-12 engine which powered Maranello's cars throughout that decade. He fell out of favour and was banished to R&D – not for the first time in his Ferrari career – ahead of the 1985 season.

Harvey Postlethwaite, whom Enzo recruited in 1981 to sharpen up chassis design, wherein Ferrari was manifestly lagging, assumed overall technical responsibilities but the uptick in performance was brief. Michele Alboreto pushed McLaren's Alain Prost hard for the championship in 1985, only to suffer a costly slump in reliability over the final races.

1986 was a washout owing to retirements brought on



**"GUSTAV BRUNNER WAS REDEPLOYED FROM THE STILLBORN INDYCAR PROJECT TO PRODUCE A CLEAN-SHEET F1 DESIGN FOR 1987"**

by failures of a frustratingly unmanageable kind: one-off breakages of ancillary components caused, most likely, by the artisan nature of Ferrari manufacture. Many parts were hand-made and they lacked consistency and interchangeability, cut and beaten to fit as they might have been in Enzo's father's workshop at the turn of the 20th century.

But this was a truth which could not be spoken at Maranello. Enzo politics also foiled pragmatism in the engine bay; to limit the rampant horsepower gains in the turbo era the FIA placed greater limits on fuel tank sizes, reducing the permitted volume from 220 litres to 195. But just try explaining to the 'Old Man' that his precious engines needed to be *less* powerful...

Many problems in the world can be obviated by throwing people and money at them, and to this end Ferrari recruited Jean-Jacques His from the Renault engine programme and embarked on a prolonged courtship to bring the visionary engineer John Barnard to Maranello. In this latter endeavour Enzo was only partially successful, for while Barnard was at loggerheads with McLaren boss Ron Dennis over issues relating to control and money, he could not be persuaded to relocate from Surrey at any price. Eventually Barnard signed up on the promise that he could direct design operations from a new facility near his Godalming home, that he would have control over the engine department, and that he would be answerable only to Enzo himself.

On track, Stefan Johansson hauled the tardy and unreliable F1-86 to four podium finishes, Michele Alboreto to one. As Enzo and his attendants performed their contractual dance

with Barnard over the summer of 1986, a human sacrifice was required to atone for the state of affairs on track. Postlethwaite had proved himself an astute politician, as well as a capable engineer, but his authorship of the car put him in the firing line, even if the root cause of the failures lay elsewhere. He was duly shuffled to the sidelines, and Austrian engineer Gustav Brunner was redeployed from the stillborn IndyCar project to produce a clean-sheet F1 design for 1987.

There was change in the engine bay, too, for here also the blame game had run rampant over preceding seasons as Ferrari's own electronics specialists came under fire, along with the work of turbo supplier KKK. Once installed at Maranello, Jean-Jacques His made detail improvements to nuances such as the compression ratio of the 120-degree alloy-block V6, but its lack of torsional stiffness – both in the block and its mounting to the car's tub – required a new approach from the ground up. Contrary to modern practice, Ferrari continued to use a subframe to mate the engine to the chassis, though this battle would ultimately be Barnard's to fight.

The all-new V6 had to comply with the FIA's latest measures to control power: mandatory pop-off valves to limit boost to 4.0bar. Cast from iron rather than aluminium (using expertise from Teksid, another Fiat-owned company), the new 1.5-litre lump carried over the 120-degree engine's bore and stroke dimensions but at the narrower angle of 90 degrees. Thin walls and rigorous design enabled it to come in at a similar weight to its predecessor, and a new engine-management system – a hybrid of Weber and Magnetti-Marelli components including a

# FERRARI F1-87

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multi-coil ignition setup – promised greater fuel efficiency.

Enzo himself was moved to remark upon the engine's frugality at launch, for it was the first Ferrari race engine to consume less than 200g of fuel per brake horsepower per hour. Quoted maximum output was 880bhp, though the company would later claim that development took it to 960bhp in qualifying trim during its service life.

While development of the previous two Ferraris had focused on weight distribution, to calm twitchy handling, aerodynamic performance had suffered as the chassis structure was beefed up. Aero efficiency was among the other factors dictating the change in engine layout, and it also spelled the end for the transverse gearbox philosophy. A longitudinal transmission facilitated narrower bodywork at the rear, profitably reducing blockages and turbulence between the rear wheels. Barnard's McLaren MP4/2 family had demonstrated the advantages of cleanliness and tight packaging in this area and, though he arrived after the F1-87 had been drawn, Barnard would contribute further developments here.

Brunner spared no efforts in reducing the frontal area of the F1-87, narrowing the nose, the mirrors and air inlets, and removing the portly bulge behind the driver's head. He also redrew the sidepods and suspension, returning at the rear to the pullrod layout which had been dropped for the F1-86.

Barnard, not a man who relished taking up others' work, had little interest in the F1-87 – the most charitable thing he would later say is that there were elements he would have done differently – but he was to be quickly disabused of the notion ►





that he could focus on setting up his UK office and drawing an all-new car for 1988. The all-powerful Italian media had christened him *Il Mago* – the magician – and it was expecting the technical enchantments to commence immediately.

Political expediency therefore dictated that Barnard become embroiled in development of the F1-87. He did not think much of the car or its designer; and Brunner, for his part, did not think much of the brusque manner in which Barnard imparted this intelligence. By the end of the 1987 season Brunner was exploring opportunities elsewhere.

Relations between the British and Italian wings of the Ferrari empire continued to be fractious. In Maranello, Enzo's illegitimate son Piero Lardi Ferrari was empire-building in the hope of succeeding his father when the time came, and he saw the Anglicisation of Ferrari's engineering efforts as an insult to the company's traditions. Barnard noted instances of pointless sabotage: rent on the new design office in Shalford was paid late, items dispatched to Italy were claimed to have not arrived, or to have been damaged in transit.

As well as being a racing car, then, the F1-87 was also a political grenade. Out of the box it was quick, but not as quick over a single lap as the Williams FW11B or Lotus 99T, nor as

consistently rapid over a race distance as the latest McLaren. It was understeer-prone and unreliable – the former of which could be addressed through development, the latter rather less easy to pin down. As ever at Ferrari, responsibility for poor reliability was laid at the door of the car's designer even if the root cause was slack manufacturing practice.

New recruit Gerhard Berger finished fourth in the season opener at Jacarepaguá, while Alboreto was classified eighth after spinning off. Both drivers complained of indifferent handling. A Barnard-steered suspension, braking and aerodynamic update was introduced at the San Marino Grand Prix, where Alboreto was third. At Monaco a late engine failure on Alain Prost's McLaren promoted Alboreto and Berger to third and fourth, but the Italian then retired from the next 10 races and he joined his national press in pointing the finger at the team's superstar designer. Momentum began to gather around a narrative – encouraged by Piero Ferrari – that it had been a waste of time setting up in the UK when the team had enough facilities at its disposal within Italy.

The working relationship between Alboreto and Barnard, strained at the best of times, effectively ended when Alboreto vented spleen to a reporter from *L'Equipe*, likening the



NOW  
THAT  
WAS  
A  
CAR

No.98


FERRARI F1-87

Shalford arrangements to a brain surgeon attempting to perform an operation down the telephone. This incendiary quote resulted in Barnard being hauled in front of an impromptu press conference at Hockenheim, where a day later both cars retired from the race.

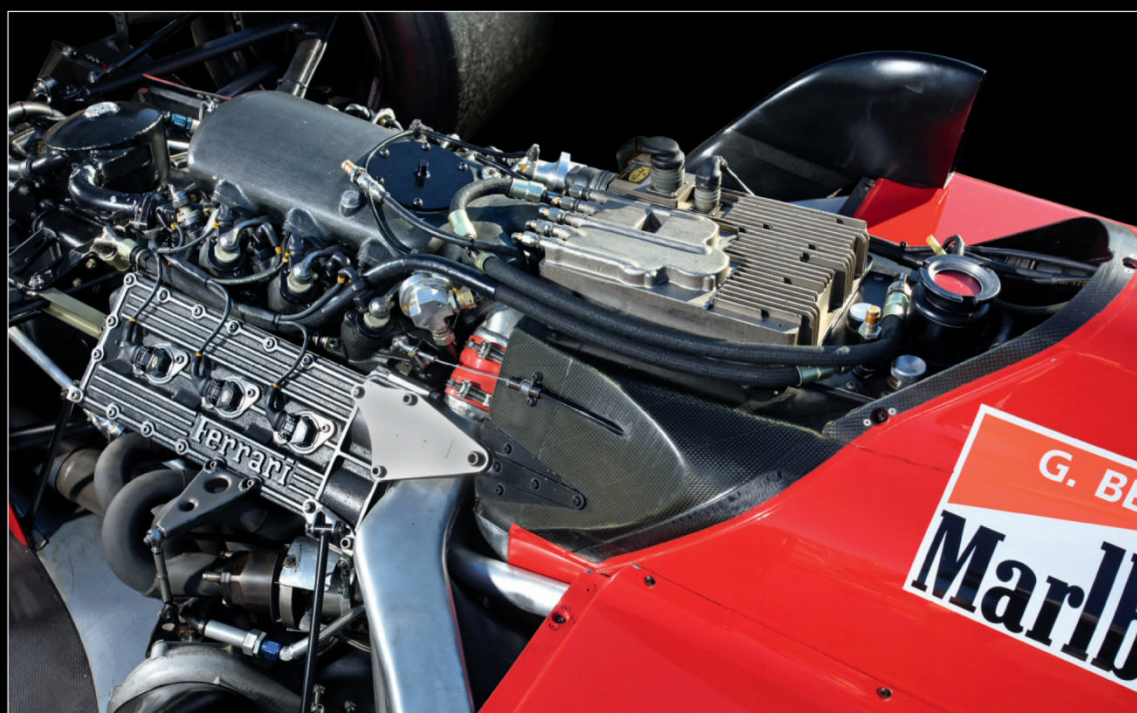
Next time out, at the Hungaroring, Berger qualified on the front row but retired with a broken differential. Three rounds later he led the majority of the Portuguese Grand Prix, only to spin on worn tyres and finish second to Prost. These examples sum up Ferrari's season in microcosm.

After all the tumult, development turned the F1-87 into a winner as Berger dominated the Japanese GP from pole position and followed that up with victory in the season-closer in Adelaide. This should have been the end of the road for this car but Maranello politics had put the brakes on Barnard's planned V12-powered successor: all the windtunnel time had been allocated, on Piero Ferrari's say-so, to an entirely different project led by Postlethwaite.

To the surprise of many, Barnard emerged the winner from the ensuing bust-up and Piero was exiled from the race operation. It was too late for the V12 car – that would have to wait another year – so an evolution of the F1-87 contested the 1988 season. If the Italian media hoped the final races of 1987 would provide a form guide, unfortunately Honda and McLaren had a riposte in store.

Enzo Ferrari would not live to see his beloved cars win again – though they would, at Monza, just three weeks after his death. Driving chassis 102, pictured here, Berger led an emotional 1-2 finish in front of the tifosi after Ayrton Senna's dominant McLaren tangled with a backmarker. It was the only race McLaren failed to win that season. On this day of all days, no one within the Ferrari firmament would be called upon to utter a *mea culpa*... 

“POLITICAL EXPEDIENCY THEREFORE DICTATED THAT BARNARD BECOME EMBROILED IN DEVELOPMENT OF THE F1-87. HE DID NOT THINK MUCH OF THE CAR OR ITS DESIGNER”



#### RACE RECORD

**Starts** 64  
**Wins** 3  
**Poles** 4  
**Fastest laps** 7  
**Podiums** 11  
**Championship points** 118

#### SPECIFICATION

**Chassis** Carbon fibre monocoque  
**Suspension** Double wishbones with pullrod-actuated coil springs/dampers front and rear  
**Engine** 90-degree twin-turbocharged V6  
**Engine capacity** 1496cc  
**Power** 880bhp @ 11,500 rpm  
**Gearbox** Six-speed manual  
**Brakes** Discs front and rear  
**Tyres** Goodyear  
**Weight** 540kg  
**Notable drivers** Michele Alboreto, Gerhard Berger



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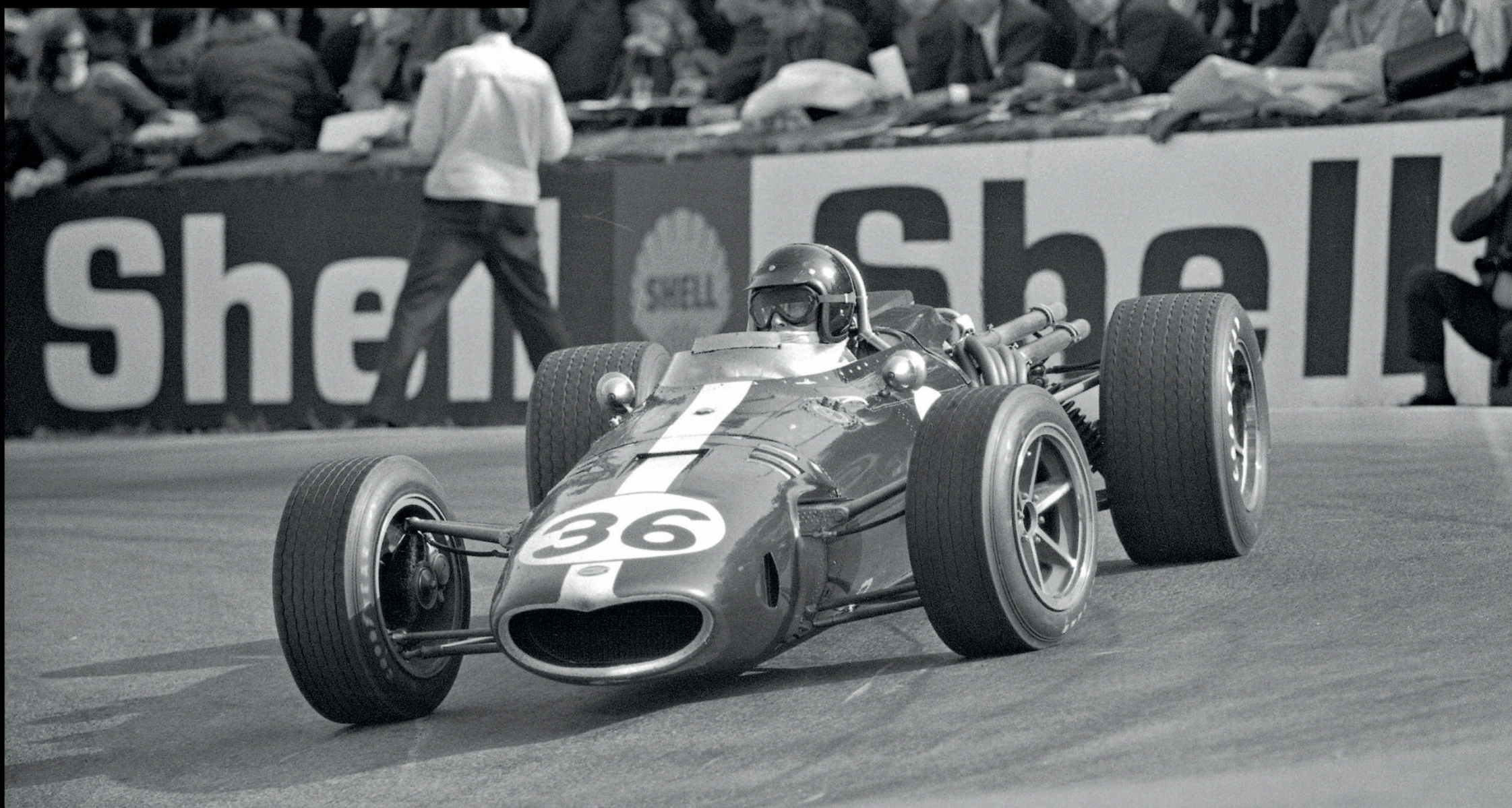


# ONE-HIT WONDERS

Stars that shone brightly, but shone only once. We take a look at those teams and drivers who won just a single race

▼ *Jean-Pierre Beltoise only qualified his BRM fourth for the 1972 Monaco GP, but made a superb start to get ahead of the field well before the first corner. The Frenchman then led all 80 rain-sodden laps to finish 38s clear of Jacky Ickx*





*Dan Gurney had already won three world championship F1 races when, in 1966, he entered his own car, the Eagle, under the All American Racers banner. The following season Gurney blitzed the field in Belgium for the team and car's only victory*



*Heikki Kovalainen's one success came in Hungary in 2008. Ferrari's Felipe Massa passed Kovalainen's team-mate Lewis Hamilton at the start but, after Lewis punctured at half-distance and Massa retired with three laps to go, Kovalainen inherited the win*

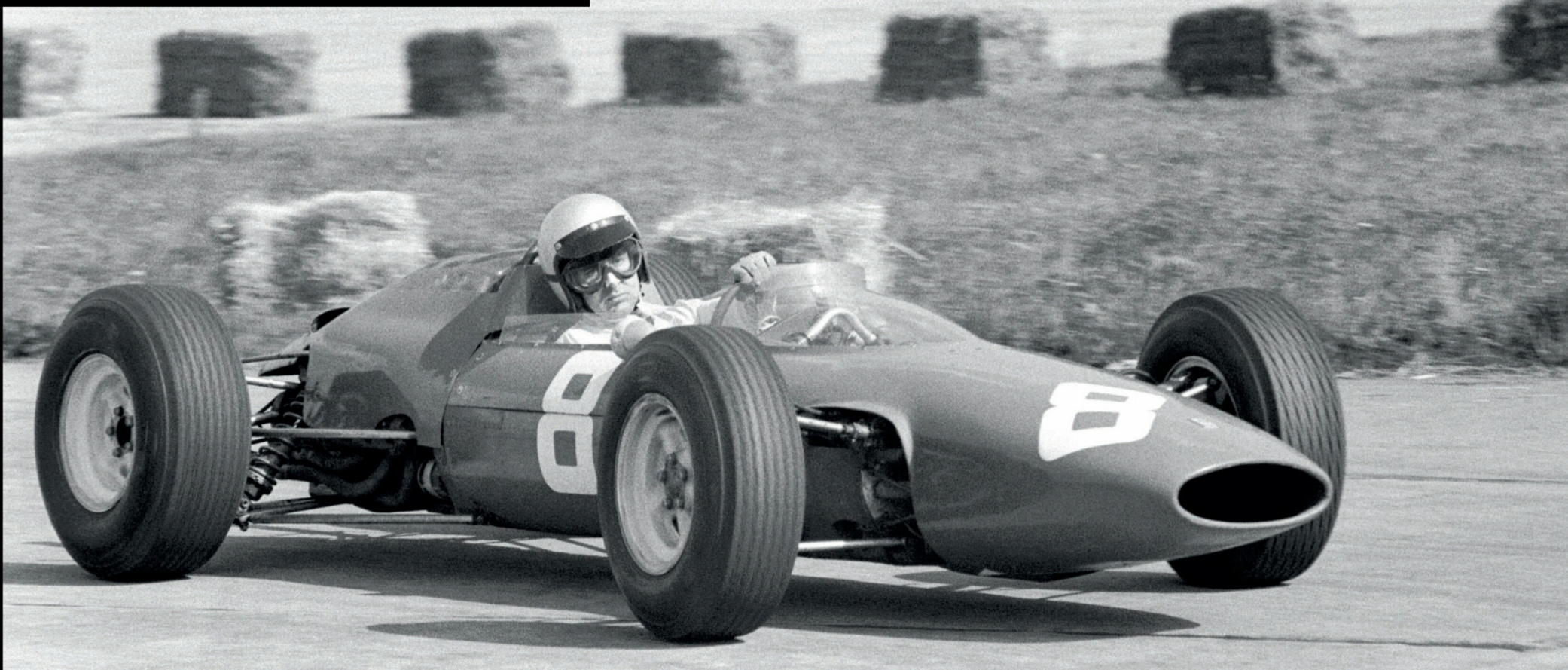


*Jo Bonnier, surrounded by the crowd, has just won the 1959 Dutch GP to give BRM its first world championship victory. The tall Swede raced on and off until 1971, latterly in cars run by his own team, but never even managed another podium*

► Jean Alesi (right) and brother Jose read about Jean's 1995 Canadian GP victory in *La Gazzetta dello Sport*, the Italian sporting bible, as Alesi was, of course, driving for Ferrari at the time. Had Alesi followed through with the contract he signed with Williams for 1991, instead of switching to Ferrari, then the chances are he wouldn't have been a one-hit wonder...

▼ Until the 2012 Spanish GP it was Pastor Maldonado's crashes that hit the headlines. At Barcelona that day all that changed. Williams used the undercut to get ahead of leader Fernando Alonso's Ferrari at the second round of pitstops and Maldonado held off Alonso and a charging Kimi Raikkönen to win





▲ 1964 was Lorenzo Bandini's best season in F1. Driving works Ferraris in every race for the first time in his career, the Italian came to the Austrian GP at Zeltweg fresh from a podium at the previous race. In a race of attrition Bandini and second-placed Ritchie Ginther were the only cars on the lead lap and Bandini's 156 came out on top

▶ The leading protagonists of the Hesketh F1 team line up at the 1975 Dutch GP: Lord Hesketh, James Hunt, Anthony Horsley and Harvey Postlethwaite. Hunt's victory in the race at Zandvoort, driving the Postlethwaite-designed 308, was the privateer British team's only success from 52 GPs contested. By the start of 1976 both Hunt and Postlethwaite had left but the F1 team wasn't wound up until 1978

▶ Gunnar Nilsson was drafted into Team Lotus early in 1976 when Ronnie Peterson left for March. Nilsson bided his time with the Lotus 77 but in 1977 the Lotus 78 proved a more competitive beast. Team-mate Mario Andretti won four times and Nilsson took the Belgian GP. Nilsson had already lost his Lotus drive for 1978 when he was diagnosed with cancer. He signed for Arrows, but never recovered and died in October 1978





▼  
Stewart GP's only F1 win came in a rain-affected European GP at the Nürburgring in 1999, thanks to Johnny Herbert. Team owners, triple world champion Jackie Stewart and son Paul (far left and far right), Rubens Barrichello (left) and Herbert celebrated the win and Barrichello's third with gusto but the team had already been sold to Ford and was renamed Jaguar for 2000

▲  
Sebastian Vettel had only started 21 F1 races when he put his Toro Rosso on pole for the 2008 Italian GP. In wet conditions Vettel provided the team a first – and subsequently only – front-row start. Vettel went on to win the race by over 12 seconds, and when the team was re-christened AlphaTauri for the 2020 season that Monza victory remained Toro Rosso's only success

▲  
Ludovico Scarfiotti was signed by Enzo Ferrari to his stable of F1 drivers for 1963 but opportunities with the Scuderia were few and far between for the Italian. Scarfiotti had only previously started three world championship races when he stunned the F1 paddock by winning the 1966 Italian GP at Monza, the first Italian to win on home soil for 14 years





▲ Porsche's dalliance with F1 in the 1960s was brief. After it ran modified F2 cars in 1961, for 1962 the German company designed the 804, powered by a flat-eight engine. It proved successful as Dan Gurney won the French GP at Rouen and a non-championship race a week later. Despite this Porsche withdrew at the end of the season citing increased costs, and this remains the marque's only win as a constructor

▼ François Cevert's whole F1 career, from 1970-1973, was spent with Tyrrell as team-mate to Jackie Stewart. In 1971 Cevert broke his duck and won the season-ending US GP at Watkins Glen, then collected eight more second places during 1972 and 1973 but no more victories. Lined up to replace the retiring Stewart as team leader for 1974, when more wins were likely, Cevert was killed in practice for the 1973 US GP

▼ Ligier was disappointed when Olivier Panis only qualified 14th for the 1996 Monaco GP due to a misfire, as the team felt a top-six position was on the cards. At the circuit where track position is so important, a combination of forceful driving from Panis, and a high rate of attrition among those cars ahead of him, meant the Frenchman took the lead of the race on lap 60 and held on for the remaining 15 laps for his only F1 win





Luigi Fagioli has a world championship F1 win to his name, even though the car he was driving actually finished the 1951 French GP in 11th, 22 laps down. This is because, until the practice was outlawed, drivers could take over a teammate's car if theirs hit trouble. Juan Manuel Fangio did just that in this race at Reims and went on to win driving Fagioli's Alfa Romeo, so both drivers were credited with the victory



Starting the last lap of the 1971 Italian GP at Monza, Peter Gethin, Ronnie Peterson, Mike Hailwood, François Cevert, and maybe Howden Ganley, were all potential winners as the slipstreaming nature of the circuit aided overtaking. At the chequered flag Gethin claimed his only F1 win by 0.01s from Peterson. Hailwood, in fourth, was a mere 0.018s behind...

# Join MAX'S ORANGE ARMY

## DUTCH GRAND PRIX ZANDVOORT CIRCUIT

3rd-5th September 2021

As Dutch motorsport fans finally get a home Grand Prix, here are our top 5 things to check out in Amsterdam on race weekend.

Max Verstappen's devoted Orange Army have been a regular sight in recent Formula 1 seasons. The Dutch fans are easy to spot in the grandstands: they're usually behind a wall of orange smoke, bouncing to the sound of Eurobeat loud enough to register on the Richter scale.

This coming season, they'll be rewarded for following their hero and touring the continent with the first Dutch Grand Prix in over 35 years. And they'll be hoping to celebrate the first home win for a Dutchman in Formula 1 history.

The race returns to Circuit Zandvoort, an undulating circuit on the sandy dunes of the Dutch coast. A classic track from previous eras, Zandvoort is characterised by its steep banked final turn – a feature rarely seen in modern Formula 1. It will prove a unique test for the drivers, and a real spectacle for the fans.

But those fans have more than just the race to enjoy. Zandvoort is less than half-an-hour by train from one of Europe's top city destinations: Amsterdam. And the Dutch capital itself is only an hour's flight from London, making it one of the most accessible races on the calendar for UK racing fans.

With a selection of ticket and Amsterdam hotel packages on offer for the race weekend, we're getting you prepared with five things you'll need to check out between catching the action on track.



### Brouwerij 't IJ

2



Amsterdam is home to one of the world's most famous beers, and the Heineken Experience is probably one of the city's most Instagrammed attractions. You'll learn the history on a tour of the high-tech museum and, sure, you'll learn how to pull the perfect pint, but there'll be plenty of Heineken to drink at the circuit on race day.

For an authentic Dutch beer experience, we recommend heading to Brouwerij 't IJ. Set up in 1985 beside the iconic De Gooyer windmill, the brewery specialises in experimental beers. There's a self-service tap room on the site of their original brewery, and for the beer geeks among us, they offer whistle-stop 20-minute tours of the brewery on weekends, too.

### Food Hallen

3



Delicious Dutch delicacies include Poffertjes (small baked pancakes), pickled herring and Bitterballen (deep-fried meatballs). And you'll find them all at De Hallen; a hipster-savvy street food market with 20+ vendors serving up meals late into the night.

You'll do well to resist some of the dishes from around the world, though. With Asian-Mexican fusion, DimSum, Sushi, and Vietnamese among some of the cuisines on offer, our challenge to you is to find dishes from as many 2021 Grand Prix hosts as possible...



## Johan Cruyff Arena

1

Renamed in honour of the Dutch great in 2018, the Johan Cruyff ArenA is an essential visit for any sport's fan. The home of European football greats Ajax, the stadium hosted the Champions League final in 1998, and more recently was the venue for Chelsea's 2013 Europa League victory.

A tour of the stadium includes a walk through the players' tunnel onto the pitch, a photo op in the locker room, and a virtual reality experience, placing you in the boots of a player on matchday.

## 5 EXTRA THINGS TO DO IN AMSTERDAM



### Canal Cruise

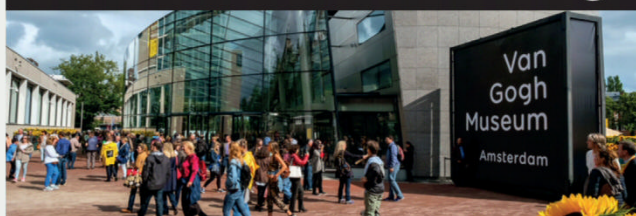
3

If you choose to spend all three days at the circuit, you may not have all the time in the world to see the sights. Taking to the city's historic canal ring is a smart solution.

There's an experience for all racing fans. The 100 Highlights Cruise takes you through a number of the canals, taking in the city's beauty spots and elegant old centre. Dinner cruises are popular for those who want dinner with a view, but we reckon racing fans might prefer the Pizza Cruise for a relaxed meal and beers after a day at the circuit.

### Van Gogh Museum

4



Two million visitors annually flock to see the work of the Netherlands' most famous personality: artist Vincent Van Gogh. If you need a more leisurely excursion during the race weekend, you could stroll around this collection of 600 original works from the painter.

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- South side of Amsterdam, including breakfast each morning
- **FOR AN EXTRA £243** upgrade to Hairpin 2 Grandstand (Turn 10) race tickets

### 2 FULL WEEKEND RACE PACKAGE RRP £1,727

- 3 day Eastside 2A Grandstand (Turn 11) race tickets
- 4 nights Ibis Amsterdam Centre – 3-star Hotel (arriving Thurs)
- Central Amsterdam location, including breakfast each morning

### 3 PREMIER RACE PACKAGE RRP £2,227

- 2 day Pit Grandstand race tickets (Sat & Sun)
- 3 nights – Kimpton de Witt 4-star Boutique Hotel (arriving Thursday)
- Central Amsterdam location, including breakfast each morning

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FINISHING STRAIGHT

## RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 2

# THE EMILIA ROMAGNA GP IN 3 KEY MOMENTS



The moment of truth as Verstappen inches ahead of Hamilton on the run to Tamburello

### 1 Verstappen needs no help to shake off Mercedes as Pérez disappoints

**Little more than eight hundredths** of a second separated Max Verstappen from the polesitting Mercedes of Lewis Hamilton, and yet Max wasn't even on the front row – he was edged out by Red Bull team-mate Sergio Pérez. After two seasons in which Red Bull has been denied tactical options because Verstappen's team-mates haven't been able to qualify far enough up the grid, this seemed exceedingly promising even with a Merc on pole.

Come race day, though, Max beat Lewis fair and square – and did it solo, seizing the lead at the start and then consolidating his advantage as Pérez had two costly spins into irrelevancy on Imola's slippery surface.

Hamilton would make two expensive mistakes of his own, though the costs would be ameliorated by a red flag which enabled him to regain a lap lost

and charge back to an eventual second place.

Rain ahead of the start rendered intermediates the compound of choice for the majority of the grid. Verstappen really hooked up in the second phase of acceleration, passing both Pérez and Hamilton. Crucially, he got to the inside at Tamburello first and annexed the racing line, thus giving Hamilton the option of backing off or hanging in there and clattering over the kerbs as the Red Bull claimed the line for the right-hand element of the chicane.

Almost inexplicably – he was racing against Max, right? – Lewis took the latter option and dislodged a footplate from his front wing. Mercedes engineers later estimated this cost Hamilton half a second per lap.

The race was neutralised as Nicholas Latifi and Nikita Mazepin collided on the opening lap and

then Mick Schumacher nerfed a barrier while trying to keep his tyres warm behind the ensuing Safety Car. Pérez also explored the boundaries and was handed a 10s penalty for overtaking cars which had passed him while he was rearranging the gravel.

In green-flag conditions Verstappen pulled away, although Hamilton reeled him back in as the inters started to wear out and their respective teams dithered over the decision to swap to slicks. A slow stop caused by the Merc's front-right wheel not coming off promptly put paid to the undercut, and Max was off again.

Hamilton strayed off the dry line at Tosa while attacking traffic and went off, nudging the barrier and losing a lap as he backed out and cruised to the pits, but he regained it when team-mate Valtteri Bottas and George Russell collided at the

Tamburello, bringing out the red flag (see Bottas feature, p32). Taking the rolling restart in eighth, Hamilton charged to second over the final 29 laps.

After nearly dropping it at Rivazza ahead of that rolling restart, Verstappen roared clear again to win by 22 seconds.

## 2 Artful Norris pulls clear of the midfield massive

“I’m very happy with what I’ve seen so far from Lando this year,” said McLaren team principal Andreas Seidl after an eventful weekend at Imola. Norris, he reckons, has found additional speed and consistency by working diligently with his engineers to analyse last season and “digest it the right way”.

On Saturday Norris castigated himself for a track-limits violation which caused him to lose a Q3 time good enough for third on the grid. Starting seventh, behind team-mate Daniel Ricciardo, Norris initially dropped two places after contact with Lance Stroll’s Aston Martin but fought back past Stroll, Carlos Sainz and Pierre Gasly after the Safety Car, then successfully lobbied the team to order Ricciardo to let him past for fifth place because he was faster. Even Ricciardo conceded this was the right course of action.

Norris gained two more positions as Pérez and Hamilton dropped back and was third behind Verstappen and Charles Leclerc at the red flag. It was an improved showing for Ferrari, but the Scuderia had achieved some of that pace by adding downforce in anticipation of wet conditions. Norris took the restart on softs and made short work of Leclerc’s medium-shod Ferrari to claim second.

Soon enough, Hamilton roared up behind him but Norris diligently and cleanly ‘parked the bus’ at the apex of Tamburello for five laps before the world champion got by.

“We made the decision to go on the softs and I wasn’t so confident to get the tyres working – it is not an easy track to overtake on – but I think it was the right decision,” said Norris.

### Norris recovered well from his qualifying disappointment and claimed a deserved third



## 3 Double points finish for Alpine after baffling Räikkönen penalty

Behind Norris, the Ferraris and Daniel Ricciardo, post-race penalties shuffled the order of the lower points-paying positions. Lance Stroll again got the better of his four-time world champion team-mate to place his Aston Martin seventh, only to be reclassified eighth via a 5s time penalty for leaving the track and gaining advantage while passing Pierre Gasly – who was reclassified seventh.

Gasly was another beneficiary of the red flag, having dropped precipitously in the early running after starting on full wets and staying with them too long. Esteban Ocon started ninth and finished there for Alpine but he too yo-yoed after starting on the wets, though he pitted for inters straight away.

Team-mate Fernando Alonso inherited a point when Kimi Räikkönen was penalised 30s for an infringement after a spin behind the Safety Car before the final restart. The stewards admitted the wording of the rules in these circumstances were “contradictory”, leaving a grey area as to whether Kimi could retake his position or had to restart from the pitlane. In the confusion he did neither.



### Alonso leads Alpine team-mate Ocon, but by the end the positions were reversed

# RESULTS ROUND 2

IMOLA / 18.4.21 / 63 LAPS



1st	Max Verstappen	Red Bull	2h2m34.598s
2nd	Lewis Hamilton	Mercedes	+22.000s
3rd	Lando Norris	McLaren	+23.702s
4th	Charles Leclerc	Ferrari	+25.579s
5th	Carlos Sainz	Ferrari	+27.036s
6th	Daniel Ricciardo	McLaren	+51.220s
7th	Pierre Gasly	AlphaTauri	+52.818s
8th	Lance Stroll	Aston Martin	+56.909s*
9th	Esteban Ocon	Alpine	+65.704s
10th	Fernando Alonso	Alpine	+66.561s
11th	Sergio Pérez	Red Bull	+67.151s
12th	Yuki Tsunoda	AlphaTauri	+73.184s**
13th	Kimi Räikkönen	Alfa Romeo	+94.773s***
14th	Antonio Giovinazzi	Alfa Romeo	+1 lap
15th	Sebastian Vettel	Aston Martin	+2 laps/g'box
16th	Mick Schumacher	Haas	+2 laps
17th	Nikita Mazepin	Haas	+2 laps

\*includes 5s penalty for exceeding track limits \*\*includes 5s penalty for leaving track and gaining an advantage \*\*\* includes 30s penalty for rolling start infringement

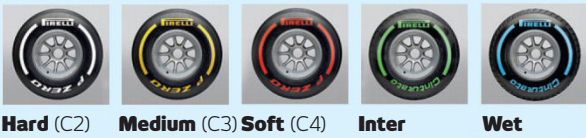
### Retirements

Valtteri Bottas	Mercedes	30 laps - accident
George Russell	Williams	30 laps - accident
Nicholas Latifi	Williams	0 laps - accident

### Fastest lap

Lewis Hamilton: 1m16.702s on lap 60

### TYRE COMPOUNDS USED



### CLIMATE



### AIR TEMP

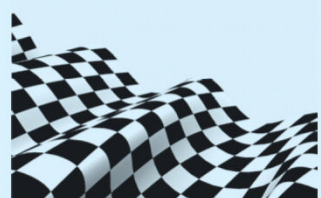
9°C

### TRACK TEMP

17°C

### DRIVERS' STANDINGS

1 Hamilton	44pts	11 Tsunoda	2pts
2 Verstappen	43pts	12 Ocon	2pts
3 Norris	27pts	13 Alonso	1pt
4 Leclerc	20pts	14 Räikkönen	0pts
5 Bottas	16pts	15 Giovinazzi	0pts
6 Sainz	14pts	16 Russell	0pts
7 Ricciardo	14pts	17 Vettel	0pts
8 Pérez	10pts	18 Schumacher	0pts
9 Gasly	6pts	19 Mazepin	0pts
10 Stroll	5pts	20 Latifi	0pts



FINISHING STRAIGHT

## RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 3

# THE PORTUGUESE GP IN 3 KEY MOMENTS

### 1 Bottas undone by another Hamilton masterclass

**"He just drove an immaculate** race. It makes no sense to talk about these exceptional Lewis performances, because it's his standard now..."

You might expect such effusive praise from the team boss of the winning driver, but Toto Wolff made a valid point all the same. No matter the unfavourable circumstances thrown at him, Lewis Hamilton nearly always seems to find a way.

It wasn't quite as challenging as Imola, but nevertheless Hamilton had no business winning the Portuguese Grand Prix once Valtteri Bottas converted pole position into the race lead and Max Verstappen opportunistically overtook Lewis after the Safety Car restart.

"I was focusing on Valtteri and I for a split second looked in my mirrors to see where Max was and in that split second that's when Valtteri went," is how Hamilton explained his uncharacteristic sluggishness. "I pulled out and gave Max Valtteri's

tow and I was like, 'you idiot', to myself..."

After making the best of Saturday's blustery conditions to bag his first pole of 2021 – by just 0.007 seconds – Bottas now had everything within his grasp, but not for the first time he struggled to turn a chokehold into suffocation by squeezing the life out of the race.

Hamilton, running a skinnier rear wing than Bottas, made short work of re-passing Verstappen – using DRS approaching Turn 1 – then pulled a similar move on Bottas at the start of lap 20/66 (on the outside this time), having finally managed to keep close enough through the downforce-sapping long-radius final corners of the Portimão circuit.

"Disappointing" was Valtteri's summation. "When you start from pole position, you have only one target for the race and that is to win. It didn't happen so I'm disappointed – but I don't really know why in the first stint I didn't really have the pace.

"I felt everything – in terms of the race start, the restart – was good from my side but I could see quite early on with the mediums, I just didn't have pace like Lewis and Max had. I have no idea why. I don't have the explanation."

Bottas improved on the hard tyre – once he'd given up second to Verstappen exiting Turn 4 having struggled, like everyone else, to get the compound 'switched on' after his pitstop. But that improvement only extended to matching Hamilton's pace, not beating it. That poor first stint on mediums completely undid Bottas.

He was at least coming back against Verstappen until some of Valtteri's infamous bad luck – this time a faulty exhaust sensor – temporarily robbed the W12 of power and let Max off the hook. Already this championship is looking like a two-horse race. Bottas still trails McLaren's Lando Norris by five points...



Hamilton took the lead by going around the outside of Bottas at Turn 1 on lap 20

PICTURES: STEVEN TEE; ANDY HONE; MARK SUTTON



## 2 Red Bull rues track limits clampdown (again)

**Max Verstappen almost bagged** pole and fastest lap but lost both to track limits offences, leading Helmut Marko to rue FIA inconsistency while lamenting Red Bull now having lost a race (in Bahrain), pole and a fastest lap bonus point because of Max's transgressions.

"Norris overtook Pérez, went over with all four wheels, and there were no consequences," Marko told *Sky Sports*. "So, it's not consistent, and that's not racing when you juggle the rules like that."

Marko was referring to an incident just after the Safety Car restart, in which McLaren's Norris ran too wide exiting Turn 4 then passed Sergio Pérez's Red Bull into Turn 5. Pérez, who finished fourth, said he didn't defend because he figured the overtake would be ruled illegal. "I misjudged it there," said Pérez. "A shame because that cost me my race."

Race director Michael Masi said the incident was reported by Red Bull, reviewed, then rejected on the grounds the pass itself happened at Turn 5 not 4. Verstappen's 'pole lap' was rightly expunged for an offence at Turn 4. Similarly, his fastest lap of the race (set after both he and Bottas stopped late for fresh tyres) was correctly deleted after he went wide exiting Turn 14.

Max was only 4.1s behind Hamilton before that stop, but would the race have gone differently had he been on pole? Christian Horner seemed doubtful. "We lacked a bit of straightline speed," Horner said of RB16B, which featured "subtle" upgrades here. "It was easier for them [Mercedes] to pass us than us to pass them. We are satisfied we've had a decent performance at a track we finished [genuinely] 30 seconds behind at last year."

**Red Bull was unhappy with what it perceived as inconsistency in policing of track limits**

## 3 Norris stars again as Alpine joins the fight

**The incredibly tight battle** between those titans of the 2000s, Ferrari and McLaren, continued at the front of the midfield, while the renamed Alpine (née Renault) team also got into the mix after a couple of difficult races.

Carlos Sainz secured Class B 'pole' on Saturday and rose to fourth at the start – but switching from soft to medium tyres instead of hards at his sole pitstop proved erroneous as Sainz's Ferrari tore up the tyres and plummeted out of the points.

Lando Norris remains impressively "at one" with his McLaren, according to team boss Andreas Seidl. Norris starred again, producing a punchy drive that briefly had him running ahead of Pérez's Red Bull.

Having impressively progressed through Q2 on mediums, Leclerc mirrored the strategy of the frontrunners (medium/hard) to finish sixth, within five seconds of Norris. Leclerc was happy with his performance after a "messy" Friday and Saturday.

Daniel Ricciardo's McLaren recovered from a "not acceptable" qualifying performance (16th) to finish ninth, behind the Alpines of Esteban Ocon and Fernando Alonso.

With Enstone's troublesome windtunnel fixed, the A521 featured a new floor and looked properly competitive. Ocon qualified sixth on merit, while Alonso was "not comfortable" and "angry" after qualifying 13th but recovered to finish 1.059s adrift.

**Ocon passed Sainz as the Ferrari struggled and went on to finish seventh for Alpine**



# RESULTS ROUND 3

PORTIMÃO / 2.5.21 / 66 LAPS



1st	Lewis Hamilton	Mercedes	1h34m31.421s
2nd	Max Verstappen	Red Bull	+29.148s
3rd	Valtteri Bottas	Mercedes	+33.530s
4th	Sergio Pérez	Red Bull	+39.735s
5th	Lando Norris	McLaren	+51.369s
6th	Charles Leclerc	Ferrari	+55.781s
7th	Esteban Ocon	Alpine	+63.749s
8th	Fernando Alonso	Alpine	+64.808s
9th	Daniel Ricciardo	McLaren	+75.369s
10th	Pierre Gasly	AlphaTauri	+76.463s
11th	Carlos Sainz	Ferrari	+78.955s
12th	Antonio Giovinazzi	Alfa Romeo	+1 lap
13th	Sebastian Vettel	Aston Martin	+1 lap
14th	Lance Stroll	Aston Martin	+1 lap
15th	Yuki Tsunoda	AlphaTauri	+1 lap
16th	George Russell	Williams	+1 lap
17th	Mick Schumacher	Haas	+2 laps
18th	Nicholas Latifi	Williams	+2 laps
19th	Nikita Mazepin	Haas	+2 laps*

\*includes 5s penalty for ignoring blue flags

### Retirements

**Kimi Räikkönen** Alfa Romeo 1 lap - accident

### Fastest lap

Valtteri Bottas: 1m19.865s on lap 65

### TYRE COMPOUNDS USED



### CLIMATE

Overcast

### AIR TEMP

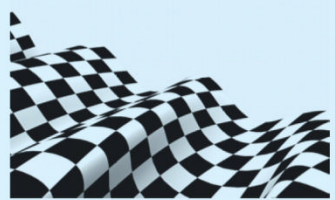
14°C

### TRACK TEMP

20°C

### DRIVERS' STANDINGS

1 Hamilton	69pts	11 Stroll	5pts
2 Verstappen	61pts	12 Alonso	5pts
3 Norris	37pts	13 Tsunoda	2pts
4 Bottas	32pts	14 Räikkönen	0pts
4 Leclerc	28pts	15 Giovinazzi	0pts
6 Pérez	22pts	16 Vettel	0pts
7 Ricciardo	16pts	17 Russell	0pts
8 Sainz	14pts	18 Schumacher	0pts
9 Ocon	8pts	19 Mazepin	0pts
10 Gasly	7pts	20 Latifi	0pts



FINISHING STRAIGHT

# RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 5

# MONACO GP

20-23 May 2021

Circuit de Monaco, Monte Carlo

PICTURES: ZAK MAUGER; JERRY ANDRE; ILLUSTRATIONS: ALAN ELDREDGE



## RACE DATA

**Circuit** Circuit de Monaco

**First GP** 1950

**Number of laps** 78

**Circuit length** 2.075 miles

**Longest straight** 0.2 mile

**Race distance** 161.879 miles

**Lap record** 1m14.260s

Max Verstappen (2018)

**F1 races held** 66

**Winners from pole** 30

**Pirelli compounds** C3, C4, C5

## CAR PERFORMANCE

**Downforce level** High

**Cooling requirement** Maximum

**Full throttle** 43%

**Top speed** 181mph

**Average speed** 98mph

## TIMETABLE (UK TIME)

**Thursday** 20 May

**Practice 1** 10:30-11:30

**Practice 2** 14:00-15:00

**Saturday** 22 May

**Practice 3** 11:00-12:00

**Qualifying** 14:00-15:00

**Sunday** 23 May

**Race** 14:00

**Live coverage** Sky Sports F1

**Highlights** Channel 4

## THE MAIN EVENT

**Formula 1's jewel** in the crown is back after a COVID-enforced year off. As we inch towards the centenary of the event in 2029, the layout of the track has changed very little although the built environment of Monaco and the roads themselves have been transformed over the past century. No longer do drivers have to traverse tramlines or worry about rogue waves drenching the harbourfront section.

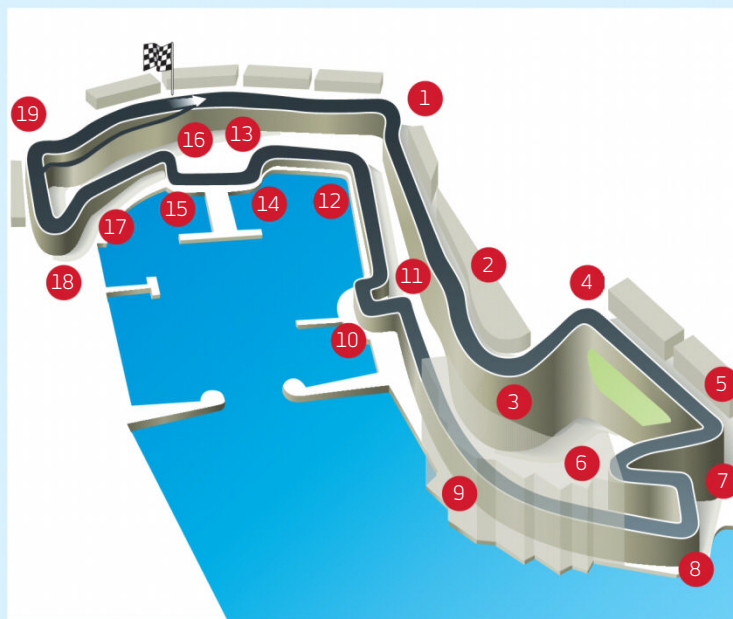
Yes, it's difficult to overtake, but this has been the case ever since grand prix cars were retarded by drum brakes, actuated from the cockpit via a lever and cable. To fret about overtaking is to miss the point of Monaco, which is *the* test of precision and consistency as drivers push while trying to stay out of the walls. That's going to be more important than ever here for teams struggling to meet the budget cap – costly wreckage is not what they want...

## 2019 RACE RECAP

The last Monaco GP took place under a cloud owing to the death of Niki Lauda, but a mourning Mercedes team honoured his memory with a victory. Lewis Hamilton won from pole but had to fight throughout.

Initially Hamilton and team-mate Valtteri Bottas ran 1-2 but on lap 11 the Safety Car was deployed after Charles Leclerc's Ferrari hit a wall. In the ensuing pitstops Red Bull turned Max Verstappen around quicker and released him ahead of Bottas. This was deemed unsafe, earning him a penalty which demoted him to fourth even though he spent the final laps challenging Hamilton vigorously for the lead.

**KEY CORNER: TURN 1** Sainte Dévote is always a pinch point on the first lap and remains a potential overtaking spot in the race, thanks to the removal of the barrier on the inside. There's still a wall on the outside, though...



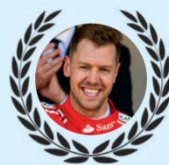
## THE WINNERS HERE...



2019  
Lewis  
Hamilton  
Mercedes



2018  
Daniel  
Ricciardo  
Red Bull



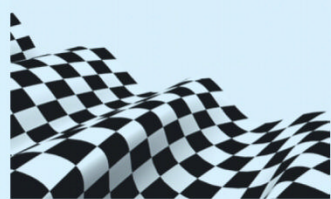
2017  
Sebastian  
Vettel  
Ferrari



2016  
Lewis  
Hamilton  
Mercedes



2015  
Nico  
Rosberg  
Mercedes



FINISHING STRAIGHT

## RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 6

## AZERBAIJAN GP

4-6 June 2021  
Baku City Circuit

## RACE DATA

**Circuit** Baku City Circuit  
**First GP** 2016  
**Number of laps** 51  
**Circuit length** 3.730 miles  
**Longest straight** 1.304 miles  
**Race distance** 190.170 miles  
**Lap record** 1m43.009s  
 Charles Leclerc (2019)  
**F1 races held** 4  
**Winners from pole** 2  
**Pirelli compounds** C3, C4, C5

## CAR PERFORMANCE

**Downforce level** Low  
**Cooling requirement** Medium  
**Full throttle** 61%  
**Top speed** 210mph  
**Average speed** 130mph

## TIMETABLE

**Friday 4 June**  
**Practice 1** 10.30-11.30  
**Practice 2** 14:00-15:00  
**Saturday 5 June**  
**Practice 3** 11:00-12:00  
**Qualifying** 14:00-15:00  
**Sunday 6 June**  
**Race** 13:00  
**Live coverage** Sky Sports F1  
**Highlights** Channel 4

## THE MAIN EVENT

**Formula 1's fastest** street circuit since its arrival on the calendar in 2016, Baku City Circuit is about to have that crown taken away by the new track in Jeddah, Saudi Arabia. Every 3.73-mile lap in Baku takes in a fascinating mix of ancient and modern as the route wends its way around the state capital via a flat-out blast along the sea front, followed by a sequence of 90-degree bends through the contemporary built environment, then an orbit of the UNESCO-listed walled city.

The nature of the circuit means trade-offs have to be made on car setup, since the main straight is unusually long, and cars in high-downforce trim are sitting ducks at the end of it. This spot is usually the focal point of argy-bargy between drivers as they try to assert themselves for position before the street section which follows.

## 2019 RACE RECAP

The drivers largely behaved themselves in the most recent edition of the race. Valtteri Bottas stuck his Mercedes on pole from team-mate Lewis Hamilton and rebuffed a stiff challenge from Hamilton to maintain that position on the opening lap. Even when DRS became available Bottas stuck to his guns and there was little Hamilton could do to prevent his team-mate running out the victor by a second and a half.

The battle for the final podium spot was fraught, though Ferrari's Sebastian Vettel had pulled away from the Red Bull of Max Verstappen by the chequered flag.

**KEY CORNER: TURN 8** This is where it can all go horribly wrong for a driver when they're pressing on, usually in qualifying: the road narrows dramatically as it funnels uphill past the ancient walled city.



## THE WINNERS HERE...



2019  
 Valtteri  
 Bottas  
 Mercedes



2018  
 Lewis  
 Hamilton  
 Mercedes



2017  
 Daniel  
 Ricciardo  
 Red Bull



2016  
 Nico  
 Rosberg  
 Mercedes



# F1 UPGRADES

Enhance the F1 experience with the latest must-have products

## TAG HEUER MONACO GREEN DIAL WATCH

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[tagheuer.com](http://tagheuer.com)

If you thrilled to the sight of Jean Alesi tearing around Monaco in Niki Lauda's 1974 Ferrari 312B3 (prior to being punted into the wall) during the recent Historique event, now you can buy the watch. TAG Heuer is marking its sponsorship of the 2021 weekend with this 500-piece limited edition of the iconic Monaco timepiece, as popularised by Steve McQueen.

Within the distinctive square steel case, an emerald green dial with a graduated tint frames two square black sub-dials and rhodium-plated indices and hands. The oscillating mass and column wheel of the Calibre Heuer 02 movement are also green-coloured and visible through the rear of the case. It's secured on the wrist with a black alligator leather strap.



## FORMULA 1 2021

Price £49.99 (PC via Steam), £59.95-£74.99

[ea.com](http://ea.com)

The latest version of Codemasters' long-running officially licenced F1 game series (published by Electronic Arts) is on its way and available to pre-order. As usual it's not just a cosmetic makeover taking in the new team liveries and identities: tweaks include three new circuits, improvements to the career mode,

plus a new story mode.

F1 2021 will include Imola and Portimão, both of which were late additions to last year's calendar and have stepped in for other circuits this season. The new track in Jeddah, home of the Saudi Arabian GP, will be available as a free download once the circuit has been finalised.



Career mode now includes a two-player option which enables friends to connect and play together – co-operatively or against one another. The two-player mode makes a welcome return and ‘Real-Season Start’ enables players to begin the game at any point in the season with real-time championship standings.

Fictional rival driver Devon Butler, last seen in F1 2019, will make a return in the new story mode which Codemasters says will take players

“on an epic journey” through F2 into F1. The popular driver-manager ‘My Team’ mode is also returning for 2021 and will include seven ‘classic’ drivers from previous seasons.

As is usual, the game is available in standard and deluxe formats with various content packs and a cache of in-game currency which can be spent on cosmetic items. It will also be the first F1 game to exploit the capacity of the latest PlayStation and Xbox consoles.



#### OGIO ASTON MARTIN F1 LUGGAGE

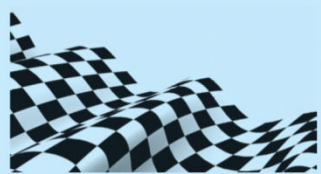
**Price** £59.95-£299.95

[eu.ogio.com](http://eu.ogio.com)

**Among the blizzard** of partner announcements which accompanied the launch of the newly rebranded Aston Martin F1 team was a new arrangement with the golf equipment and active lifestyle company Ogio. Part of a family of businesses which includes Callaway Golf, Travis Mathew and Jack Wolfskin, Ogio is Aston Martin’s official luggage supplier. Yes, F1 teams really have these and it does make for a rather surreal experience at the luggage carousel

should you find yourself sharing a plane with team personnel.

The basic item in the range is the Aero 25 backpack which has a 25-litre capacity, an abrasion-resistant base, an air-mesh cushioned back panel and a padded internal sleeve large enough to accommodate a 15-inch laptop. As well as various rucksacks, the range includes a 32-litre duffel bag and two large gear bags featuring wheels, multiple grab handles and flexible internal storage.



FINISHING STRAIGHT

# THE FINAL LAP

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## FLAT CHAT

{ FULL THROTTLE  
MUSINGS WITH  
**STUART CODDLING** }

PICTURES  **motorsport  
IMAGES**

## ALL THE BEST PEOPLE, ALL OF THE TIME

**Monopolising the talent pool** is a virtually surefire way to ensure success in Formula 1. Until pretty recently, for instance, Mercedes had so many former technical directors from other teams on its books that it seemed to have one for every day of the week and another for Sunday best.

Aside from laying hands on sufficient coin of the realm to pay all those salaries, the challenge is how to manage that inevitable moment when they decide they want to leave – either for another team or to enjoy more time on the sofa, spending Sundays digesting *Bridgerton* or somesuch froth rather than performance data. Longtime McLaren insiders remember what ensued when John Barnard signalled his intention to move to Ferrari: blazing rows, followed by Ron Dennis flying to Maranello to have it out with Enzo Ferrari personally. Ron thought nobody would be left to design his car, temporarily forgetting there was a whole team responsible for putting pen to paper.

Even today, while no one person is responsible

for drawing every detail of the car, senior engineers with a vision of car concept and performance remain highly prized. That's why, to flick back to the 1980s, Dennis tried to 'get medieval' with Ferrari, then poached the inventive and highly rated Gordon Murray from Brabham (parenthetically, authorship of the legendary MP4/4 remains the subject of a bunfight too steeped in angst to go into here).

It's also why, when Murray pronounced himself sick of F1's ever tighter regulations, Ron threw him the F1 road car project – better to sink millions

**Allison's move into the newly-created chief technical officer role will keep him out of the clutches of other teams**



into that than let Murray 'retire' and be recruited by someone else. What was Murray doing between 1998, when the last F1 was built, and 2004, when he left McLaren? Not being involved in the design of any other team's racing cars, that's for sure. More recently, Red Bull has had to perform the same dance of the seven veils to keep Adrian Newey on board.

The concept of being 'paid and displayed' remains alive and well, it seems. A few weeks ago Mercedes issued a press released detailing a new management structure in which technical director James Allison would move to a newly created chief technical officer role, with technology director Mike Elliott slotting in as TD. In the carefully crafted corporate communication Allison said "people have a shelf life in senior roles in this sport", and that it was "the right time for the organisation and myself" to step aside so the team would "benefit

from the freshness" a new person might bring to the role.

Subsequent conversations have added more nuance, as Allison revealed that establishing an end point formed part of his last round of contract negotiations in 2019.

"I wanted to make sure I could be true to this team," he said, "to make sure that I committed to being a technical director over a period where I could earn my salt but not to outstay my welcome, and to know when the right time to step away was. I would much rather that was done while I was still useful than becoming an old embarrassment..."

Essentially the CTO role has been created by team principal Toto Wolff to keep Allison engaged as part of the organisation, rather than drifting into a retirement from which he might quickly become bored, as creative and driven people are wont to do. This Allison has tacitly acknowledged, saying, "I thought I would be stepping away to my sofa to cheer the team from the sidelines as a punter. Happily, Toto saw it a little differently."

The new role will enable Allison to "focus on longer wavelength" stuff and not tread on Elliott's toes. Who knows? In the next 15 years he might design the ultimate road car...

**GP Racing has a podcast!**

Search for 'Flat Chat with Codders' in your podcasting platform of choice.

PICTURE: STEVE ETHERINGTON. ILLUSTRATION: BENJAMIN WACHENIE

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